THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 10 AUGUST, 1928 No. 5

The Story of Sulphate Pulp Manufacture

Extracts from the Private Papers of C. F. Dahl, Original Inventor of the Sulphate Process

IN AN article contributed by Engineer L. J. Dorenfeldt to the **Papir-Journalen**, of Oslo, Norway, (21, 1927), and which has since been reproduced in the special number of the **Papier-Fabrikant**, of June, 1928, a valuable historical account is given of the origin of the sulphate pulp industry as revealed by the publication of C. F. Dahl's private account of "Methods for the Manufacture of Cellulose."

Although reference has been made previously in THE PAPER INDUSTRY to the circumstances which led to the production of kraft pulp and paper, as distinguished from sulphate pulp and paper, it may be of interest to repeat the statement that we owe kraft paper to the blunder of a digester man. In 1885, at the Munksjö mill in Jönköping, Sweden, where sulphate pulp was made under Dahl's patent, a digester was blown before the chips were fully cooked. It was being considered to empty the contents of the digester into the river, when Alvar Müntzing, who was in charge of the mill, ordered the pulp to be run through a kollergang with the idea of making an inferior paper from it. The result, however, was a paper surpassing in strength any previously made, and undercooking afterwards became the regular practice in a number of mills for the production of a wrapping paper that was so strong in comparison with similar papers that it got the name "kraft", which is Swedish as well as German for **strong**. Alvar Müntzing was in later years, down to 1917, secretary of the Swedish Paper Mills Association and at the same time editor of the **Svenks Pappers-Tidning**, the leading Swedish technical periodical.

The production of sulphate pulp may be said to date from 1879 when Dahl began to experiment with the substitution of sodium sulphate for soda ash in replacing the soda lost in cooking straw. Patents were granted to Dahl on this sulphate process in 1884, the earlist patents having been taken out in England and in Austria, followed later by German, Swedish and American patents.

Mr. Dorenfeldt, who is a frequent visitor to the United States, as he is retained on the consulting engineering staff of the West Virginia Pulp and Paper Company, is the second oldest living man in the sulphate industry, the oldest being Otto Gehrke, superintendent of the sulphate plant of Stora Kopparbergs Bergslags Aktiebolag, at Skutskär, Sweden.

As set forth by Mr. Dorenfeldt in his introduction to C. F. Dahl's private account of methods of preparing and cooking wood for the manufacture of Chemical pulp by the sulphate process, he was employed at the Moss Cellulose and Paper Mills, Moss, Norway, in 1884, and was fortunate enough to be instructed in all the secrets of the process by C. F. Dahl himself.

It would be tedious to reproduce in full this forty-three year old paper of Mr. Dahl's which gives such an informing account of sulphate pulp manufacture in its earliest stages, but readers of THE PAPER INDUSTRY may perhaps gain a helpful suggestion or two from the subjoined extracts, for the translation of which from the Norwegian we are indebted to G. D. Jenssen, of New York.

Preparation of the Wood

"This should be cut in winter time, as summer cut wood, on account of sap, gives dirty, unclean pulp, which is hard to bleach. The wood should be seasoned about a year before being cooked, as wet wood needs more liquor than dry wood and also causes uneven cooking results. Each single cooking should have uniform wood, as the pulp will otherwise be of inferior quality. Therefore, it is important that wet and dry, old and young, wood grown on fertile and lean soil, should not be mixed.

Barking

"The best method is to bark the wood as soon as cut and then to pile the wood crosswise loosely so as to allow full circulation of air. This method of piling should at least be carried out in the mill wood yards.

"After the bark has been removed, the two or three last year rings should also be removed. These are less affected by the liquor and later on cause slivers in the pulp, which hardly disappear in the bleaching.

"Knots which are surrounded by thin bark or look decayed ought to be bored or chopped out.

"After the wood has been thoroughly barked and freed from dirt, it is brought to the wood chipper. It pays to clean the wood thoroughly, as the pulp will be cleaner. The ends of logs floated down the rivers should be cut off, as these hold a considerable amount of grit and sand.

Chipping

"The wood chipper knives and scratchers must be kept well sharpened and in very best condition as the way the chipping is carried out has a great influence on uniformity of cooking. It is necessary to have sharp scratchers as the wood otherwise instead of being chipped in pieces will remain in unsplit pieces which do not go through the chip screens and have to be burnt up, which of course is altogether too costly. (Here follow minute directions for arrangement of knives, and for screening.)

Cooking

"The same amount of wood should always be used for each cook, as variations in the amount of wood cause inferior quality of pulp. The amount and strength of the liquor should also be about the same for each cook. The strength is measured in degrees Baumé. It is also important to keep the same cooking period from the time the steam is admitted until maximum pressure is reached, and also the same pressure should be kept on the digester.

"If the pulp is too soft the pressure should be lowered 5 to 8 per cent. If it is found that this is not sufficient the liquor should be made weaker. If the pulp turns out too hard or contains uncooked pieces, the pressure time should be lengthened or the liquor strengthened, but always in the same proportion, from 5 to 8 per cent. If the pulp is of a dark color but otherwise well cooked, the liquor should be strengthened and also a larger quantity of sodium salts used, and the pressure lowered, for instance 4 pounds. If only bleached pulp is made, the liquor should be made stronger but the pressure lowered. The pulp will then be very white and at the same time have a long fibre.

"The digester foreman should have a diagram on which to note down pressure and time. He should then draw up a diagram, date, number of cooks, cubm. of liquor and strength of the liquor in degrees Bé. This record should be left in the office every day. He should also deliver a note about the results of each cooking. The cook should sign it with his own name and it is necessary for him to watch the operation closely, which is quite necessary in order to obtain good results. (Dahl then gives directions for bringing up to pressure, blowing, etc.)

Liquor Preparing

"The preparing of the liquor in the plant should be done as carefully as in a laboratory. Each tank should be carefully scaled and the weight of the different chemicals carefully made on a scale before being dissolved. The plant should be a laboratory on a large scale. All tanks should be provided with scales. 100 kgs. good sulphate in 1 cubm. water will measure 10° Bé. at 25 Cent. Every degree Baumé corresponds therefore to 10 kgs. sulphate in cubm. 83.33 kgs. English 52 per cent soda ash in 1 cubm. water will also have the strength of 10° Baumé at 25 centigrades. It is then easy to figure out how much of sulphate or soda is contained in a certain quantity of liquor in any tank in the plant. It is also easy to make any quantity of a certain strength, provided chemicals are available.

"This method is not quite scientifically right but will give an easy practical way of making liquor of any desired strength. Chemicals bought on the market are not chemically pure and therefore it is more convenient and even more correct to deal with the materials available in a practical way than to base calculations on theory. In order to make a successful cook it is of importance to know what quantity of salts and what quantity of liquor on a certain amount of wood—for instance one digester filling—is necessary to convert the wood into good easy bleached pulp. Using caustic soda the following quantities are required:

10 cubm. liquor 16° Bé.	1,333 kgs.
Black liquor 1.5 cubm. 14° Bé.	175 kgs.
Total salts to be used	1,508 kgs.

The black liquor has no action on the wood but serves only to cover the chips.

Causticizing

"A certain quantity of the black regenerated chemicals is pumped into the mixers. Soda ash or sulphate is added and dissolved by means of an agitator and steam. Then burnt lime is added up to an amount of 60 per cent of the total soda quantity. This mixture is agitated and steam injected until a thorough boiling is reached, whereafter the steam is reduced so that the mixture boils slowly without boiling over. After half an hour slow boiling the steam is shut off, the agitator stopped and the liquor left to be clarified. The clear liquor is poured over a filter which retains coal and lime particles. When causticizing above 12 to 14° Bé. certain insolu-

ble salts are formed which are lost if the first liquor without further treatment is poured over the lime filters. After the strong liquor has been poured over the filters it would therefore be necessary to pump 2 cubms. into the mixture (caustice wash water), start the agitator and turn on a little steam in order to dissolve above mentioned insoluble salts. It would be possible to reclaim about 1½ to 2 cubms. caustic liquor in that which either is mixed in the strong liquor or strained through the filters. The best way is to let the wash water from the filters down into two tanks. Tank No. 1 should contain liquor of over 5° Bé.; tank No. 2 liquor under 5° Bé., together with the last very weak water.

"These tanks should also be provided with a scale. The quality of the lime may vary. It is very important to get fresh and fairly hard burnt lime. The lime should be delivered in lumps and not in powdered form and the operators should observe this very closely. It is hard to give definite instructions, on the liquor preparing man will be able to judge for himself after having obtained some experience.

Tests on Causticity of the Liquor

"In the sulphate method, it is sufficient if 50 per cent of the total amount of chemicals is caustic. Over 60 per cent caustic sodium compounds is not necessary, it is even deterimental. 10 cc. liquor is tested with any acid and the number of cc. noted down. To a quantity of liquor is then added a chlorbarium solution, boiled, and 10 cc. of the clear liquor titrated. The caustic is then equivalent to the number of cc. of acid used when titrating the clear solution after adding chlorbarium and the number of cc. to use when determining the total amount of sodium compounds.

"**Example**—10 cc. of a liquor, 16° Bé. using 16 cc. acid. After boiling with chlorbarium are, for instance, 10 cc. necessary? Therefore in that case the relation would be 16:10 or 1:.625 or 62.5 per cent caustic and 37.5 per cent not caustic salts. This method is not quite correct but gives a good idea of the composition of the liquor to be used. Rosol is used as indicator and same should be dissolved in alcohol. It is easier to observe the change of color from dark red to light yellow using this indicator than when using litmus.

"The method generally used in the soda method when determining causticity by adding hydrochloric acid and observing the amount of carbon dioxide expelled is not sufficiently accurate in the sulphate method. It is always necessary to use more than 1,333 kgs. of fresh caustic liquor (in the soda process) for one digester filling. If the liquor gets weaker, 1 cubm. more liquor can be added to each cooking, or caustic soda which should be added evenly during the chip filling. This way should only be used in case of emergency as the acid might spoil the wood locally.

Substituting of Sulphate for Soda

"The causticizing of the sulphate liquor is carried out in the same way as the soda liquor, only less lime is used and the sulphate is added in the mixers. If for instance after having calculated the monthly consumption, 25 per cent has been found, 12 per cent is added in the mixers and 13 per cent in the soda recovery furnace. If 10 cubm. solution of recovered salts has a test of 16° Bé.—

This corresonds to	1,333 kgs.
12 per cent hereof	160 kgs.
Total	1,493 kgs.

"Then 1,493 kgs. are causticized with 30 per cent lime or 448 kgs. It is feasible at any time to add soda to the sulphate solution, but for that purpose 60 per cent lime would be necessary.

10 cubm. recovered soda solution of

16° Bé.	1,333 kgs.
Soda ash (Na_2CO_3)	100 kgs.
Sulphate	60 kgs.
Total	1,493 kgs.

Lime for 1,333+60 equal to 1,393 at 30 per cent	418 kgs.
100 kgs. soda at 60 per cent	60 kgs.
Total lime	478 kgs.

"This small percentage of added lime refers to cases where all recovered salts are burnt. As long as there is soda in the liquor, the lime charge should be kept over 30 per cent as otherwise incomplete causticizing would result. It is a good practice to dissolve the last sulphate salts only in a tank and pump this up at a strength of 20° Bé. to an extra tank. In that case it is only necessary to calculate the black liquor for the mixers.

"In regard to the lime to be added, the soda solutions and the soda ash should be calculated as follows:

5 cubm. recovered solution at 16° Bé	666.5 kgs.
5 cubm. soda solution at 16° Bé	666.5 kgs.
Soda ash salt	50.0 kgs.
Sulphate salt	110.0 kgs.
Total	1,493.0 kgs.

Lime for 666.5 kgs.+ 110 sulphate 30 per cent	233.0 kgs.
Lime for 666.5+50 soda 60 per cent	430.0 kgs.
Total	663 0 kgs.

Addition of Sulphate in the Furnace

"If the soda furnace is evaporating liquor for six cooks in 24 hours we have the following calculations: 1,333×6=7,998 kgs. minus 25 per cent loss (5 per cent is loss in lime)=1,600=6,398 kgs. soda recovered. The combined loss consists of one-quarter of 7,998 kgs.=1,995.5 or about 2,000 kgs.; 13 per cent of 7,998=1,040 kgs. which has to be added in the furnace. Provided the furnace makes

eight charges in 24 hours each charge will be 130 kgs. These 130 kgs. must be added slowly each time cold liquor is added.

"After six weeks to two months when all chemicals have arrived at the right composition and all liquor is thoroughly worked into the system, the sulphate charge can be reduced slowly and the whole loss up to 20 per cent can be added in the mixers. To add more than 20 per cent of the total amount of sulphate to the mixer is undesirable. The rest should be added in the furnace. It is also important during the first six weeks to be very careful in the reduction of lime to 30 per cent, as in that time sodium carbonate contained in the liquor is slowly converted. It is important to observe the following points in order to get the right working conditions in the sulphate process:

"1—Add always the same amount of sulphate in the mixers as well as in the furnace. Sulphate cannot be causticized as soda and cannot be added to a weak liquor in order to strengthen same. By doing that the pulp produced will have a dark red color.

"Every trial departing from these rules would be a useless experiment. I have tried every possible way of adding sulphate but have found it best as here described.

"2—Burn or better melt the recovered liquor thoroughly. If the burning was carried out in the old way, sodium compounds would be formed which would react as soda and therefore increase the specific gravity of the liquor and would react as soda in the titration. Of course this would mean a false test.

"3—Add lime slowly in the causticizing until all salts are completely dissolved. The saft solution is then heated and boiled thoroughly at least half-an-hour.

"4—Dissolve the melted black salts in a tank to a liquor of 20° Bé. then pass the liquor into a tank to remain at least twelve hours so that iron sulphide is allowed to float on the surface of it. Heavy liquor thus floated from iron sulphide is diluted in warm water, pumped into the mixers and causticized with 20 per cent lime. The clear liquor obtained after settling and cooling is used for a new liquor cook or let down in the wash water tank. The best is to have two tanks. One serving for a 12-hour clarifying of the liquor and the other filled with clear solution for feeding the liquor mixer. The size of these tanks should be 30 to 40 cubm. The clear liquor is drained out by means of a decanter which should be provided with a strainer.

(Directions for bleaching are given followed by methods for calculating losses of chemicals. We omit these and insert here notes on the management of the recovery furnace.)

"The most important points to be observed in this operation are low temperature and thorough stirring of the slowly evaporating liquor. Too high a temperature spoils the fire bricks and walls of the furnace, evaporates considerable soda which comes to the chimney and, worst of all, causes explosions in the furnace which can be so strong that the walls and arches break and endanger the operators' lives. Thorough stirring is necessary as the top crust easily catches fire if the furnace is neglected in this respect; if the operator puts his stirring iron in to break the crust an explosion is almost unavoidable.

"In the sulphate method where a thorough incineration is necessary to recover the chemicals and sulphate is added to the liquor, an efficient stirring furnace is even more necessary. If the mass is melting, fire should be avoided as much as possible and crust scraped out while it is a little damp. The blue, bad-smelling gases from the half burnt crust should never appear in this operation.

Filling the Incinerator

"This operation should be carried out in such a way that the bottom if possible is covered with a thick tarry mass so that the fireproof lining is not damaged by the melting chemicals.

"When using furnaces with tapered bottoms the following rules should be adhered to:

"Evaporated black liquor is pushed close to the arch so that all melted chemicals can run in the same direction to the deepest part of the furnace. After the furnace has been in operation for some time, the unmolten chemicals should be taken out. These residues are left exposed to the air before being brought to the dissolving tanks. During the burning it is absolutely necessary to use as little heat as possible. The chemicals melt at dark red heat and therefore this temperature should not be exceeded. The best fuel for firing the incinerator is bark or wood, or a mixture with small pieces of coal. It is however better not use coal, as this easily causes evolution of gas and explosions. Another cause for explosions is too weak draft in the furnace which happens particularly after it has been in operation a long time without cleaning. It is important to be very careful when using coal and not open more than one furnace door at a time. If several doors are open at the same time too much cold air is admitted to furnace and chimney. In that case no draft is left over for the fire. The combustion is suppressed, the gas and smoke comes out of the doors, the room is filled with explosive mixtures and the air admitted through the doors cause explosions. These gas explosions can be very sudden and can cause bad injuries both to the incinerators and their attendants.

Prevention of Bad Odors

"1—The melted chemicals should be dissolved as quickly as possible in order to prevent the influence of the atmosphere.

"2—The blowing of the gas from the digesters

should be done at first through the turpentine catcher, i. e., tar oil stills. At the end of the cooking the steam should go at first through the pre-heating coil (in a tank above the digesters) and from there to the condensers. If the condensed water smells badly, some lime sludge from the filters in the bleach powder dissolvers should be used. No steam from the digesters should be let out in the air. In order to remove the odor almost completely, the steam, when blowing off the digester, should be condensed in air-tight storage tanks and the condensed water passed into milk of lime solution. From the condensers finally at 2 to 3 sq. inch pipe takes the carboniferous material to the steam boilers where they are burnt together with the small amount of sulphur also contained in the gas.

European Forestry

Part 3---Visit to Forestry Schools

By FRANKLIN MOON

Dean, New York State College of Forestry, Syracuse, N. Y.

This article, which concludes the series which began in the June issue of THE PAPER INDUSTRY, *is substantially the same as appeared in the July, 1927 special edition of The News Letter published by the New York State College of Forestry at Syracuse University, with some added deductions. It is a report of Dean Franklin Moon's sabbatical year abroad, during which he visited practically all the important forestry projects and forestry schools of Europe. The Dean has written this story for the benefit of those interested in forestry problems of the United States.*

BY THE first of November, I felt that I had exhausted the forest regions surrounding Pau. Consequently, on the 10th of November I started for the second of my educational trips. After an overnight stay at Bordeaux where I procured some additional figures on research in the Landes pineries, I headed for Paris, headquarters of the Department of Waters and Forests presided over most ably by M. Carrier, an engineer by the way, a man of fine presence and charming personality. In his work he is most ably assisted by M. Emery, a very able forester. From both of these officials I received a very cordial greeting and offers of all the help and advice that I might need.

The statistical summary of the French forestry situation may be of interest:

State forests	1,429,882	hectares
Communal forests	2,177,211	"
Total public forests ...	3,607,093	"
Private forests	6,739,593	"
Total	10,346,686	"

Equals about 19 per cent of land surface.

As these figures indicate, the amount of national forest actually owned by the government of France amounts to only about 14 per cent of the entire forested area. A glance at the forest map of France shows that even this relatively small ownership is comprised in a large number of small parcels, and only in the Landes, the Pyrenes or the Jura mountains where it has been necessary to acquire land for reclamation or stream correction projects, are the parcels sizable.

Glorified Woodlot Proposition

In the main, I believe that the forestry situation in France could be characterized as a glorified woodlot proposition; blocks of good forest capital standing upon productive soil for the most part; a stable population of woodsmen whose forebears have for generations been working in the forest; splendid roads; nearby markets. In other words, every factor, financial and economic, which warrants conservative forest management is to be found over the greater part of France.

For the most part, the oak and beech forest are handled under the shelterwood system and every five or six years the compartment is revisited in order to make another cutting. Reproduction, in the main, is by natural seeding and only occasionally is it necessary to fill in any of the blank spots by artificial planting.

Naturally, I desired most of all to visit the National Forest School—School of Forests and Waters as it is called—and so repaired to Nancy. This beautiful city, once the capital of old Lorraine, is situated close to the former boundary of the German province of that name. As a consequence, from the very beginning, the city of Nancy was practically in range of the guns, and the professors with me were extremely apologetic concerning the cut-up condition of both the forest and arboretum, explaining that on account of their limited budget it had been impossible to repair the ravages occasioned by projectiles during the war.

The forest of Armance and the nearby aboretum were both very interesting, not only from the silvi-

FRENCH FORESTS IN THE WORLD WAR AREA

Left—Where armistice was signed November 11, 1918. Right—Vista in Forest of Compiegne showing not only uncanny skill of French in thinnings, but unusual artistic sense

cultural but also from the historical point of view.

German Method Worth Trying

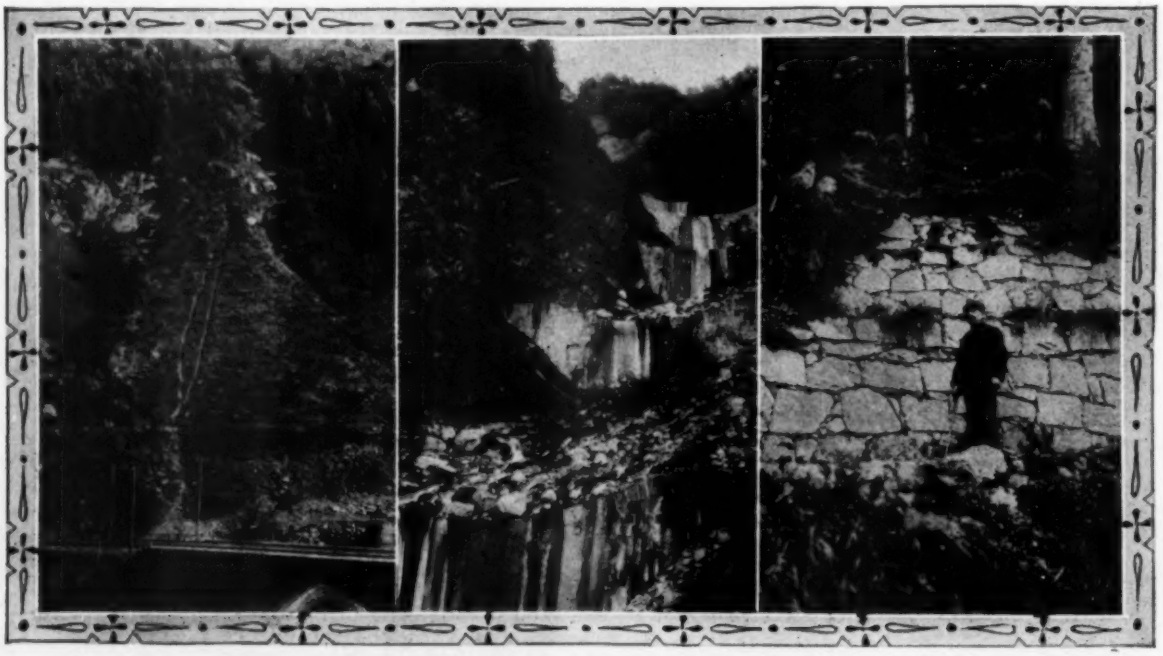
From Nancy I headed to Karlsruhe to present my letter to Oberlandforstmeister Karl Phillipe whom I had vistited in 1912 in the little village of Bretten. Again I found him a hard worker, quick thinker, rapid fire talker, profuse in his comments; he certainly gave me much to think about.

My next stop was at Heidelberg, the fine old university town, situated on the banks of the Neckar, 12 miles from the Rhine. Here the university, one of the most famous in Europe, dominates the town and the students with their famous fraternity or "Korps" caps and their more famous scars are extremely picturesque and brought to mind the romances of student days in Germany made famous by authors and playwrights from Goethe down. After seeing these young men on the streets and in the famous cafes, I came to the conclusion that students were students regardless of nationality.

Heidelberg Forest 535 Years Old

From the forester's point of view, one of the most notable features of Heidelberg was the city forest. This dates back to 1392 and contains 3,300 hectares—8200 acres—but as the Forstmeister Krutina, a very able forester, informed me that since the primary object desired by the city fathers was a recreation forest, he was able to make a very indifferent showing as far as financial returns were concerned. The forest map shows how seriously the forest has been cut up into tiny compartments and in reality bears out Phillipe's statement that the whole scheme of forest management in Germany needs a thorough overhauling and revision. Since 1810, much softwood has been introduced by clear cutting the areas and then planting. This, however, entails considerable cleaning and I was told that the average plantation thus established had to be cleaned two or three times in order to prevent the faster growing hardwoods from choking out the conifers. Even in Germany the foresters complained of the expense, even though the woodsmen get only twenty-five cents per hour.

On this forest, there are altogether about 200 dif-



INTERESTING DEVELOPMENTS IN SOUTHERN FRANCE

Left to right—Log chute on steep slope in Pyrenees. Series of stone barrages near Cauterets to prevent floods, twenty-seven barrages on this stream, Torrent of Lizey. Masonry protecting trail. The average French forest guard is an excellent stone mason in addition to his skill in the woods

ferent species. Among American species are to be found red oak, tulip poplar, black locust, hemlock, white pine, sequoia and Douglas fir, the last being the best. Another interesting factor is that while the yearly cut has increased from 3 cubic meters to 7.5 cubic meters per hectare per annum, the growing stock has increased from 69,000 cubic meters in 1851 to 111,000 cubic meters in 1910, proving that under good forest management both capital and dividends have increased.

STUDENTS OF FRENCH FOREST SCHOOL

America's Need Predicted

The underplanting after clear cutting of hardwood is rather interesting in view of the evident desire on the part of American foresters to introduce faster growing species in hardwood stands.

Herr Forstmeister Krutina made one very significant statement, and it is always interesting to get the point of view of a foreign scientific expert whose vision may be a little sharper owing to a long range perspective, that within a period of from **75 to 80 years, the American consuming public would thank God for wood cellulose in any form in which it came, whether maple, spruce or pine**—any species which could be easily reproduced and would grow rapidly, would be utilized to advantage.

As soon as the hardwoods have been removed, the softwoods are planted at the rate of 3,000 to 4,000 per hectare. The planting is generally done by women who are paid about ten cents per hour. Ordinarily, they consider that from 80 to 200 trees a day per woman is a fair average, depending on the size of the trees, condition of the soil, etc. Krutina gave me his opinion that the ideal forest for soil improvement should contain 50 per cent softwood of which about 10 per cent should be pine and 40 per cent spruce, and the remaining 50 per cent hardwoods for soil improvement. In his opinion, the best system was to have the high forest of softwoods and hardwoods beneath as an understory.

CONDITIONS IN HARDWOOD FORESTS

Left—Mature beech, Forest of Compiegne. Inspector in charge, right of tree, apologized for large number of holes in canopy caused by projectiles which injured many trees that had to be removed. Right—Thinning in young hardwood forest, Nancy. Men at right members of National School of Waters and Forests at Nancy

Faculty of Forest Officials

From Heidelberg, I traveled via Frankfort and Cassel to the little town of Munden, called Hann Munden to distinguish it from another town of similar name in Westphalia. Here is located one of the largest schools in Germany, and although of comparatively recent establishment being founded in 1868, nevertheless it is considered one of the leading German forest institutions. After a few days' stay I journeyed to the village of Tharandt to revisit the famous old Saxon Forest School founded by Cota in 1816.

Perhaps the most interesting phase of their work at this institution has been an endeavor to solve the problem of soil sickness, which is now playing such havoc in the spruce forests of Saxony. For some years, the financial return from the spruce forests of this German state was the admiration and envy of foresters from all parts of the world. The extremely rapid growth and the high demand for spruce, the close utilization which permitted the sale of practically the smallest trees and tops, insured a financial yield which on

REFORESTATION IN FOREST OF COMPIEGNE

AVENUE DE MORLAAS
This tree-lined road near Pau is an example of the beautified European highways

certain of the more select areas ran about 5 per cent per annum. However, in this case, the high yield from spruce forests brought disaster. Spruce was planted following spruce for several generations, and about a decade ago it was noticed that in addition to an unhealthy appearance of the trees, the growth rate yield in cubic contents per acre per year was decidedly falling off. A series of soil investigations were made, and it was found that the pathological conditions and decrease in the volume yield was due to the fact that spruce following spruce for too many generations had in reality poisoned the soil. After repeated inquiries, I was able to sum up the cause for this serious condition as follows: It is the opinion of Dr. Gustav Kraus, head of the Soils Department of the Saxon Forest School at Tharandt, that "on soils deficient in lime, repeated crops of pure spruce will cause soil sickness". The real difficulty in this case is that the continued fall of the spruce needle on soils deficient in lime produces an acid condition which is extremely harmful.

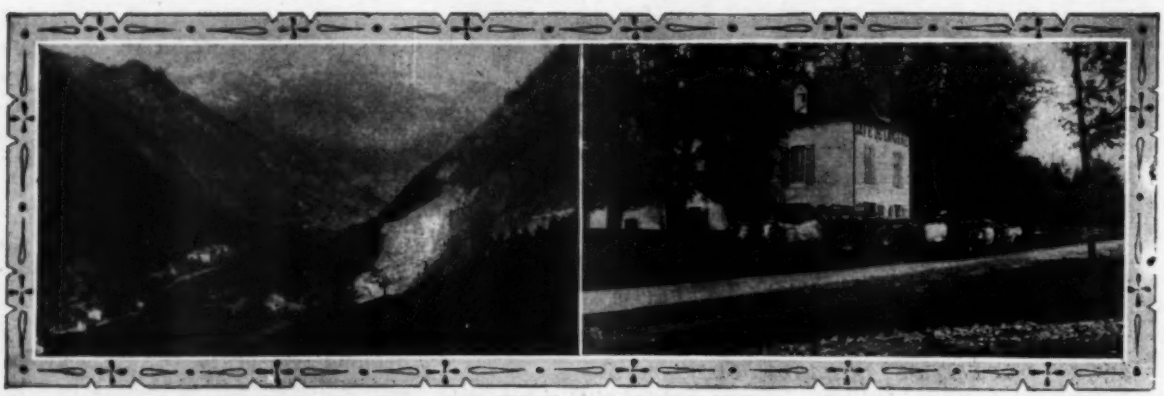
Mixed Forests Necessary

Certain experiments have been made already which makes it appear that the only remedy in this case is to remove the upper layer of humus by scraping and then apply lime in order to neutralize the soil acids.

To us in America, the thought of removing the litter from the thousands of acres of forest soil and then adding lime is staggering. However, in certain parts of Germany, I found this operation could be done for practically nothing because the litter would be scraped and carted away by farmers to be used as bedding for cattle and later as field manure, and the price paid for this litter in many cases was sufficient to cover the cost of the subsequent liming.

In spite of the fact that considerable publicity has been given in Saxony and adjoining states to the dangers attending further planting of pure spruce, on my journey from Dresden south to Munich I noticed thousands upon thousands of acres of high rolling land covered with pure spruce plantations, as yet thrifty, attractive to the eye, but still a doubtful investment. This experience in Saxony proves that in forestry as in agriculture a rotation or mixture of crops is absolutely essential.

In the course of several conferences with the fac-



THE PYRENEES PRESENT MANY ATTRACTIONS TO FOREIGNERS
Left to right—Valley in Pyrenees. Protection of buildings in foreground from falling rock cost French Government $200,000. *The usual method of transportation. In logging mountain areas, oxen give better service than horses*

ulty members of the University of Munich, I learned that Germany in the sixteenth and seventeenth centuries had gone through practically the same cycle as this country within the past one hundred years. At first, the more valuable softwoods were exploited on account of their lightness, low transportation cost and ease of working. However, in Germany the comparatively late discovery of coal has made the management of beech forests for fuel wood production an important part of the forestry program. It is only in recent years, and largely as a result of a couple of centuries of experience that a proper balance between hardwoods and softwoods has been arrived at.

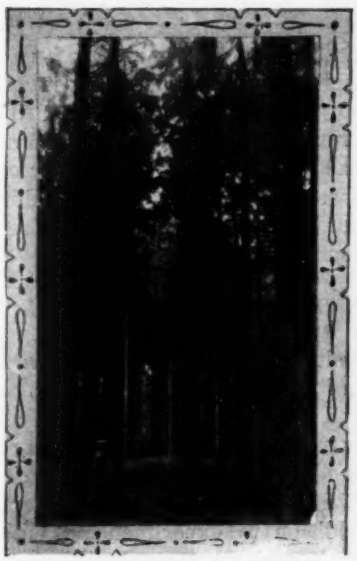
REGENERATION FOLLOWING CUTTING
Mature spruce forest near Pforzheim, Germany

Since the War, a more intensive program of timber exploitation has been followed with the idea of reducing to a minimum the amount of forest capital or growing stock. Dr. Endres stated that "in Germany as in the United States, the measure of intensiveness of forest practice will be governed by labor cost, transportation cost, etc., in proportion to the value of the finished product". In other words, with labor and transportation costs high, and with the value of standing timber and manufactured forest products relatively low, we cannot expect very intensive practice of forestry particularly by the private owners.

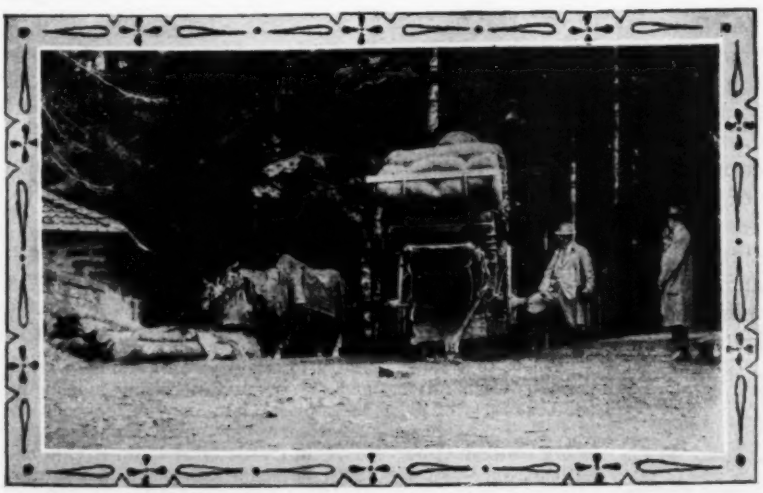
Forests of the French Capital

Upon my arrival in Paris about the first of February, I took advantage of the opportunity offered by the French chief forester, M. Carrier, and planned a series of visits to some of the so-called luxury forests near the French capital.

Naturally, the old royal hunting forests of Versailles and Fontainebleau were first visited. These are in reality forest parks of marvelous beauty. Their historical association, their rare beauty and attractive design make them a subject of more than passing interest. The Park of Fontainebleau surrounding the famous Chateau I found to be a royal forest of the first order. Superb old trees, several centuries old, which while most majestic in size and form, nevertheless contained an unusual amount of dead wood. The general condition of this forest indicated that it was being operated with aesthetic purposes as the paramcunt consideration.



PLANTED FOREST
Typical dense middle-age stand, experimental forest, University of Munich, Grafttrath, Germany



CHARCOAL IN TRANSIT VALLOMBROSA FOREST
In some cases charcoal is made to save long haul of wood to market

Later visits to other nearby forests also proved equally interesting. The forests of Compiegne in which the terms of the armistice were signed between the German and French commissioners November 11, 1918, was well worth a visit. The forest of Chantilly, one of the best examples of coppice growth which I have seen anywhere in Europe also

demonstrated the marvelous skill of the French forester in securing the regeneration of hardwoods by natural methods.

Schools for Corporals Necessary

Later on, a visit to the Secondary Schools at Nogent sur Vernisson afforded me an opportunity of gaining an insight into ranger school instruction in France. The director of the schools and head of the aboretum, M. Parde, was one of the most dynamic French foresters that I met; a thorough scientist, an insatiable reader, he stated that in his opinion "every state in America should have a ranger school in order to turn out corporals and sergeants for the forestry army".

Aside from the pleasure and value of visiting these two forest schools, the aboretum is one of the most noteworthy in Europe, and incidentally the one least visited by foresters. This tree museum was established about 100 years ago by a famous French seed merchant and arboriculturist named Vilmorin. About 50 years ago, he decided to turn this area over to the French government, and as a consequence, this school has an arboretum containing upward of 5,000 tree species and varieties, and in addition, about the same number of shrubs coming from practically every country in the world.

Centers of Research Inspected

In addition to contacts with foreign officers, and visits to the other notable forests nearby, my sojourn in Paris permitted me to visit centers of instruction and research in forestry and allied lines that were extremely helpful. During my stay in Paris, I had the good fortune to see such places as the Institute of Plant Pathology, the Pasteur Institute—which, in addition to experimenting with serums and antitoxins of all sorts has for some years been the French center for research concerning the properties of wood cellulose; the old Forest Museum upon an island in the forest of Vincennes—the site of the old Paris Exposition of 1909; the School of Horticulture operated by the Park and Shade Tree Department of the city of Paris; the Exposition of Colonial Products, rubber, precious woods, etc., staged by the Department of Foreign Affairs. All of these opened up new vistas and gave new ideas concerning forestry, its products, practice and methods of practical appeal.

Returning by way of England, my stay in London permitted me to revisit some of the old landmarks in Anglo-Saxon history, but my forestry pilgrimages were by this time at an end, and in spite of the marvelous year, I was glad to set my face toward my own country.

It is better to fall down on a job than to lie down on it. Try; there's no disgrace in failure when you've done your best.—The News Letter.

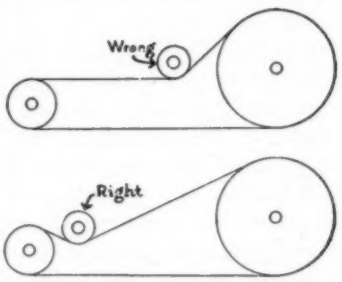
Common Error in Belt Drive

FAILURE to realize the importance of the belting question is the main reasin for lack of information on this vital subject. Inefficiency of a drive is a direct power loss and this alone is sufficient reason for intelligent study of belting. Changes, repairs, break-downs, etc., all incidental to the inefficient functioning of machine belting, add to overhead charges. Inefficient belting is a costly item—however considered.

The following is a typical belting blunder, the consideration of which should lead to a broader perspective of the question of power transmission.

The upper sketch illustrates a belting error which is frequently met with. The wrapper pulley is placed close to the large pulley of a drive, when it should be placed near the small, as shown in the lower sketch.

The small pulley is the pulley which invariably slips. The large pulley does not need additional belt contact, because its arc of contact is naturally great due to the small diameter of the small pulley.



When the wrapper is in the right position the arc of contact on the smaller pulley may be increased as much as 45 degrees.

It is immaterial which is the driver—the small or the large. Always place the wrapper close to the small pulley.

Reversible drives always offer a certain amount of difficulty. In general, drives of this type are better served by belting than by electric motors. Directly connected motors are unable to respond to the shock of reversal as well as belts.

Leather belting is elastic. The elasticity alone will absorb much of the shock. If the shock is so great that the elasticity will not take care of all of it, the belt will slip. Here is a case where belt slip is permissible and sometimes desirable. Like a fuse in an electric system, slippage allows an overload to seek the line of least resistance.

Following is a quotation from **Power Manual**, an organ of one of the largest manufacturers of electric generators and motors in the world, which substantiates the above statements:

"Where it is not necessary to maintain an absolutely fixed ratio between driving and driven shafts, belting is usually the best form of drive to employ. It is simple, inexpensive, and efficient; it has the advantage of slipping slightly under heavy overloads; because of its elasticity and slip it will absorb a portion of the shock of suddenly applied loads, and thus protect to some extent both motor and driven machine."

—From "Black and White," E. F. Houghton & Co.

Lessons in Paper Making

Lesson XXII—Beater Room Preparation

By HARRY WILLIAMSON

Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the twenty-second of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course, conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

THE above title is a little ambiguous for the points I wish to deal with in this article, yet, after careful thought, I find I cannot be strictly definitive in the title because a portion of the article itself will be expressed in terms of **opinion** as distinct from mathematically proven **fact.**

As my readers are aware, the publication of these articles brings to me an interesting volume of welcome correspondence pertaining to papermaking questions. For the most part, these questions are accompanied by a description of the difficulties encountered and the equipment used. A letter received during the past month is responsible for the title to this article and also for that part of the article which will deal with opinions. In substance, the letter is as follows:

"We are having difficulty in keeping our paper up to test, 100 per cent. Can you give us any information along these lines?"

The writer did not say whether the paper was made on a folio, kraft or book basis, what the paper was made of, or the type of equipment used. I wish I could answer that question with so little data to work from. My earning capacity would then increase to the extent that the problem of shoes for the kiddies would at least be permanently solved.

This is the day of slogans. Webster defines the word "slogan" as "the war cry or gathering cry of a Highland clan". Can we apply this definition to the well-known papermaking slogan "Your paper is made in the beater"? Is the beating and refining of stock the central, the rallying point in the manufacture of paper? If we interpret the slogan as a "gathering together of the forces", we can positively answer "yes" to both these questions. If we are to interpret the slogan literally, "your paper is **made** in the beater", we must be equally positive and answer **"no".**

To carry the simile further, history teaches us that when the Highlander heard the slogan he came to the gathering point **prepared for the work he had to do**—prepared not only with his immediate weapons of warfare, but also prepared with the inherent fighting qualities of generations of fighting ancestors. His **inherent** qualities had been **developed** so that when the slogan sounded he arrived at the rallying point in **just the right condition for the next phase of operation.**

So it must be in the manufacture of paper. In the cellulose used, whether this be of the cotton, linen, rope or wood groups, we have three factors whose **relative** value to each other must be recognized:

1—The **inherent** qualities;
2—The **potential** qualities;
3—The actually **developed** qualities.

Of this development, the **beating** and **refining** is only one phase, a very important phase it is true, yet one which can scarcely live up to the literal interpretation, "your paper is **made** in the beater".

By offering these opinions, there is no desire on the part of the writer to minimize the importance of the beating and refining operation. If paper is not entirely **made** in the beater, it can **most certainly be spoiled in the beater.** A clear-eyed recognition of **the limitation of the beating and refining operation** will save much utterly futile effort.

Did you ever try to turn a mill equipped for the manufacture of news into a book mill? Did you ever gleefully start to make kraft with three big jordans driven by 400 h. p. motors, and then find the main power development was so low that the cycles had a persistent habit of dropping from 60 to 56 every time you tried to register **one half** the rated horsepower on your jordan motors? These little things when they happen to you—and your bread and butter depends on your successful accomplishment—drive home the necessity for a careful correlation of values, the providing of equipment to make **the grade of paper you intend to sell from the kind of furnish which is going to be available to you.**

What the other fellow has installed is of informative value to you only as a means of comparison, a guide, or if his operating conditions run parallel with yours. Sometimes a very small mechanical adjustment; perhaps raising the height of the stock head on the inlet or outlet of the jordans; perhaps a change in the bar grouping; again, it may be necessary to make a change in the active chemical volume in the cooking operation to **suit the existing beating installation:** any one of these, or many other possible factors, may be just the thing needed to solve **your** problem. Only a careful study of **your own**

conditions can give you the desired results. There is no cure-all in papermaking; there is no one piece of equipment that will solve the problem equally well in every mill. A systematic check of the vital points in beating equipment while making each grade of paper will gradually build a record whose value will be of great assistance in assessing the relative value of beating and jordaning to the policy of each individual paper mill.

BEATER RECORD

Grades of Paper Made;
1 .....
2 .....
3 .....
Make of Beater ..... Beating Time for
Type of Beater ..... Each Grade .....
Rated capacity in lbs. ..... Density of Stock .....
Actual capacity in lbs..... (For each Grade of Paper Made)

Tub inside length overall
Tub inside width overall
Tub inside depth overall — Measurements .....
Gallons capacity .....

Roll:
Width of face .....
Diameter .....
Number of Bars .....
Arrangement of Bars .....
Kind of Bars .....
Width of Bars at cutting edge .....
Space of Bars at edge .....
Height of Bars from Filler .....
Life of Filler .....
Bedplate:
Size ..... Length ..... Width .....
Type (straight, angle, etc.) .....
Kind of Bars .....
Position with regard to roll .....
Width of Bars at cutting edge .....
Space of Bars at edge .....
Height of Bars from Filler .....
Kind and Life of Filler .....
Diameter of Pulley .....
Face of Pully .....
Peripheral Speed at Bar edge .....
R. P. M. .....
Motor H. P. .....

JORDAN RECORD

Grades Paper Made:
1 .....
2 .....
3 .....
Make of Jordan .....
Type of Jordan .....
Plug:
Length .....
Diameter Large End .....
Diameter Small End .....
Arrangement of Filling:
Number of Sections .....
Number of Bars per Section .....
Kind of Bars (metal) .....
Dimensions of Bars .....
Dimensions of Wood .....
Speed R. P. M. .....
Shell: Arrangement of Filling; Number of Sections....
Number of Bars per Section .....
Dimensions of Bars.....
(Cutting Edge Width)
Dimensions of Wood.....
(Width between Bars)
Height of Bars from Wood.....
(Newly Filled)
Life of Shell Filling.....
Life of Plug Filling.....
Height of Inlet .....
Height of Outlet .....
(For Each Grade of Paper Made)
Density of Stock .....
(For Each Grade of Paper Made)
Capacity in pounds per hour.....
(For Each Grade of Paper Made)
Motor H. P. .....
H. P. Consumed for each Grade of Paper Made....

Jordans and Rotary Pumps

There are certain definite benefits to be gained by passing the stock from the jordans through the rotary pump which in turn throws the stock and white water directly to the machine screen flow troughs. It nearly always follows when the piping of a machine is changed over to effect this style of delivery that a higher register of vacuum on the couch roll is obtained than is the case when the stock is delivered to the screen troughs separately from the white water. Because of this higher vacuum register, the common assertion is made that the rotary pump is performing the hydration of the fibre to a very marked degree.

It is the purpose of this article to discuss with you whether this is true or whether the advantages gained are not more nearly caused by a more adequate mixing, a better suspension and separation of the individual fibres in water.

As we know, hydration is a result of inch bar strokes applied to the fibre per minute. To obviate a cutting action to the fibres while applying these necessary blows, we provide a more solid cushion in the form of increased density of the stock charge between the stationary and revolving bars of the beating instrument. The shorter the natural length of the fibre used, the heavier must be the stock charge and the closer the grouping of the striking bars to produce a pro rata degree of hydration and cutting action.

In a rotary pump we have from three to six impellers, widely spaced, revolving at a very high rate of speed in the **lightest consistency of stock charge used in any stage of the paper manufacture.** In fact, so light is this consistency—99-99½ per cent water to 1-.5 per cent stock—I do not believe the stock can be shortened even by the action of the impellers, although if such a light consistency were passed through the jordans, the fibre would be cut to very short units indeed. This is probably due to the fact that the impeller blades are so widely

spaced, broad, blunt and rounded, and, of course, the inside of the pump casing is smooth. This mechanical condition leads us to the possibility of hydration of the fibre by passing the stock through the rotary pump.

Perhaps if I define hydration as "the imbibition of fibre by water", I can make my point clearer. This imbibition is not only obtained by "blows", but also by the constant "bending", the pliability imparted to the fibres **between the bar groups** of the beating agent, while the fibre is in contact with water. By this pliant action, the cells of the fibre are forced open at all angles of contact and, therefore, the imbibition of water by the fibre is accellerated. The necessity for this two-fold simultaneous operation is seen in the grouping of the jordan bars. When we design a finishing jordan filler, we group the bars close together so that the space between them is **not greater than the length of the strength basis fibre used.**

I think we can fairly assume that any hydration imparted to such a light consistency of stock charge by a rotary pump is caused by the immobility of water. In other words, the terrific speed of the impellers and the resistance of the solid pump casings impart a tremendous pressure on the mixed volume. Of this mixed volume, the fibre only is pliant, the water is immobile, the cells of the fibre are forced open and a certain degree of "imbibition by water" is achieved.

In the careful noting of the indicative factors in the operation of a machine **after** such a change in delivery of mixed volume has been made, we have a measurable unit whereby we can judge to what "degree" hydration really takes place by passing the stock through the rotary pump. As we know, the register of vacuum is indicative of the resistance offered to the passage of air through the sheet to the suction pump. This resistance can be created by the density or closeness of the formation of the fibres, comprising the sheet; by the increased imperviousness of the individual fibres by hydration; by the filling of the interstices between the fibres by the colloidal jell of hydration; or by, as we try to obtain, a **correct proportion of each.**

As the water of hydration is a component part of the fibre, it can only be removed from the fibre by (1) suction, (2) evaporation. Even suction—or as we may term it, "pressure by atmosphere"—will remove very little water of hydration and line contact by pressure will not remove any. Hence, we arrive at the necessity to evaporate an average of two pounds of water per pound of paper produced.

The general operating conditions prevailing on a machine on which such a change in delivery was recently made are as follows:

1—A lesser number of jordans used;

2—An average higher vacuum register;

3—The same press pressure applied;

4—**A lower average steam pressure to dry the paper.**

A first glance at these advantages gained may lead us to the conclusion that the rotary pump is accomplishing the hydration hitherto accomplished by the jordans that are not now being used. In fact, the higher vacuum register seems to indicate it is effecting a greater degree of hydration than the cancelled jordans did. Yet a closer examination shows us this cannot be true. It it were true, a **higher steam pressure** would be required to evaporate the water of hydration. A lesser calender pressure would have to be applied or "blackening" of the sheet would occur and the shrinkage of the sheet would be greater. Since the change in delivery, a lesser steam pressure is used; the same, and occasionally a higher calender pressure is applied; and the machine is still able to produce a comfortable 151 inch trim on the lighter basis weights.

I wish to offer as my opinion, therefore, that these gains derived from passing the stock charge through the rotary pump have been obtained by providing a more adequate **mixing,** a better separation and suspension of the individual fibres in water rather than a marked increase in the hydration of the fibre.

In Lesson VII of this series, entitled "Slice Velocity", and dealing in part with the vital necessity to provide adequate facilities to separate and suspend the individual fibres in water **before** they reached the slice, a sketch was published showing an installation to pass the stock through the rotary pump applying to a news machine.

In our next article, we will show several sketches showing different methods of effecting this delivery and discuss some of the operating difficulties encountered and methods adopted to eliminate them.

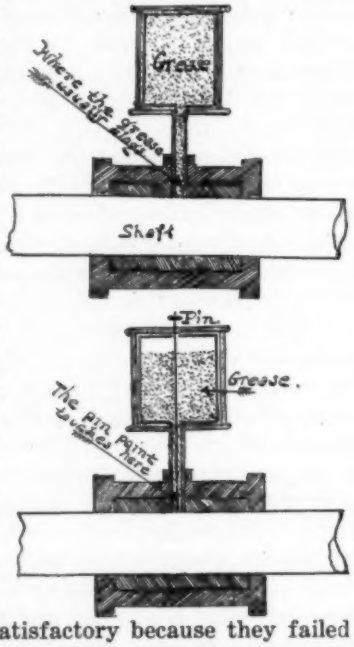
Modern Machinery and Its Relation to Production

By GEORGE RICE

TWO paper mills placed side by side, both run under the same management; the machinery operated by the same class of operatives on the same kind of raw materials and products; one equipped with machinery thirty years ago, and although kept in fair running condition by efficient repair and replacement of worn parts, nevertheless old machinery; the other equipped with machinery of late design and construction—it will be found upon calculation of production costs that that of labor will be two or three per cent lower in the mill equipped with modern machinery than in the one equipped with old machinery. The reduced labor cost is, however, only one factor in the annual financial budget of the mill. There are other overhead economies

gained with the up-to-date machinery, such as reductions in repair and upkeep expenses, and the many conveniences of adjustment which go with new machinery, all of which tend to enhance the quality and quantity production of the plant.

An item of mechanical importance which has developed into successful and extensive proportions within recent years is the electrification of all or part of the machinery. The author recalls many instances of complete electrification of paper mill machinery after a reasonable period of experimenting, and does not recall any instance of a mill discarding the motor drive after a fair trial. Of course, there have been unfair trials and troubles due to mistakes in estimating power and speed requirements. A motor designed for light work cannot be expected to perform heavy work. I have seen good motors called weak and unsatisfactory because they failed to drive extra machines which were hitched on to them after they had been properly installed by the representatives of the builders.



Electric power is securing a strong footing in many of the great manufacturing plants. It is common to find large group motors of fifty to one hundred horsepower operating heavy single machines or a number of light machines in paper mills. Individual motor drives of small horsepower are also becoming plentiful in modern plants and in old plants in which the management finds it profitable to modernize the driving system of some of its machinery even if it is not possible to modernize the machinery itself. Under normal conditions, an electric motor will drive an old machine equally as well as a new one, providing the former is in serviceable running order. The author makes this qualifying remark because of a recent observance where two internal resistance motors were in the repair shop of a mill because the arc brushes and the arc resistance spools were burned. Upon examination, it was found that the two machines which these motors had driven were worn out rattle traps that even a strong belt line shaft would have trouble in driving.

Transmission of power by electrical conductors is now more efficient. The operating service is better due to improved voltage regulation. Fuse burnouts are fewer. The introduction of silent chain drives between motors and driven machines has assisted in increasing the efficiency of electrical drives. Ball, roller and other types of bearings which reduce frictional restraint are also helping. But these bearings on a motor do not offset the pull of ill-kept or incompetently lubricated bearings on the driven machine.

Speed Demands Lubrication

An experience in one mill is given as an example of what has undoubtedly happened in others. A motor of proper size and design was installed to drive a machine which had for years been operated at low speed by a belt driven from the overhead line of shafting.

The agent of the electric motor firm noted the low speed of the machine and was justified in stating that its speed would be increased with a motor without any impairment to the quality of the product.

The promise of increased speed and consequent increased production was sufficient inducement for the manager to direct that the motor be put on. The motor worked perfectly, the speed of the driven machine was increased and the product enlarged upon. But the old machine with its old style bearings and grease cups could not stand the pressure. The bearings heated constantly. The machine had to be stopped at intervals for the bearings to cool down. Cold water was thrown on them. They were deluged with oil from the outside at frequent intervals. But the bearings were designed for grease lubrication and the grease clogged at the point indicated by the arrow in the accompanying diagram. Finally, a pin was put through the cup and down into the oil tube where its point rested upon the shaft. The vibrations of the shaft acted upon the point of the pin, producing a movement which prevented the grease from clogging. All cups were similarly treated, after which the grease supply flowed much better and intensive heating of the bearings ceased.

There are many advantages of motor drives, but they have to be given reasonable treatment like any improved device. They do not have to be favored, but simply treated right. A motor picks up its load with a positive and gradually accelerated speed and this is an advantage to almost any driven machine. The fact that belts, hangers, pulleys, shafting and other equipment of overhead drives can be disposed of when motors are used is well known to all mill men.

There are other advantages and also some drawbacks, such for instance as the expense of changing from one system of driving to another. However, most of the mill officials who have made the change have discovered that the money paid for motors and wire connections has been a good investment.

Wood Preservation

3---Its Immediate Contribution to the Paper and Pulp Industry. Future Possibilities of Co-operation. Chemical, Physical and Economic Data

By JOHN G. KREER
Vice President and Technician of American Wood Impregnation Corporation

MR. ELMER T. HOWSON, western editor of Railway Age, recently addressing the American Wood Preservers Association, quoted a prominent railway engineer as saying that "the demand of engineers for so-called permanent construction has been overdone with the result that large amounts of money are being spent unnecessarily for types of construction that would last long after the time when past history indicates that the structures themselves will become obsolete. In other words the money spent to secure this additional life will in all probability be wasted because it cannot be utilized."

There is no doubt but that such wasteful investment of large sums of capital in construction has come from the impression that timber construction is necessarily of a temporary nature, and that expensive as well as troublesome repairs are to be expected inevitably when lumber is used in structures so exposed to decay attack as are pulp and paper mills.

Makeshift Wood Preservation

Mill operators have learned from costly experience that when untreated lumber is so used, there is good reason to fear just such results; and the tendency to look upon wood as a mere makeshift in construction work has been furthered by unfortunate experiments on the part of both owners and engineers with what they considered to be wood preservation; cheap, ineffective methods of treatment, or materials parading as wood preservatives whose sole merit was that they did not cost much.

To make a good quality of pulp or paper, the lime, sulphite and other chemicals must not only be commercially pure but carefully proportioned, while the equipment must be adequate. But not only that. There must be a trained force to operate, and constant supervision.

First Class Preservative Materials Essential

The successful preservation of wood presents similar problems. The chemicals used must be free from impurities, comparatively small percentages of which may have a highly injurious effect, and the correct proportioning of the mixture used as a preservative is vital. Wood is not a simple product either in its chemistry or in its physical make-up. In some respects the wood preserver, in chemically treating it to insure against decay, has more conflicting elements to consider than the pulp producer. Deep penetration and uniform distribution have to be secured, but there must be no loosening of the bond between its fibres at the sacrifice of its strength; no corrosive effect introduced by the chemicals that will eat away the metal fastenings upon which the security of a structure depends; no tendency to exudation which would interfere with paint or other coatings applied to the surface.

The equipment of a treating plant to properly impregnate lumber on a commercial scale calls for a large investment in powerful machinery, and a well disciplined organization to carry out rigidly the specifications for each detail that must be observed to produce dependable results.

No single chemical is known that will meet all of the essential requirements. Mercuric chloride has a fairly high toxicity, but as its name, corrosive sublimate, implies, is so active in attack upon metals that it cannot even be applied in steel retorts. Some of the dye-like coal tar derivatives have the highest fungicide properties but are so adsorptive that if used without a mordant they filter out at the surface of the wood during treatment. Other salts are too soluble and hygroscopic, likely to creep to the surface under certain conditions of surrounding moisture; or they are chemically unstable, breaking down in contact with iron to acid forms that oxidize wood, destroying it almost as badly as the decay they are intended to prevent.

It is to be noted also that there are many different varieties of fungi amongst the wood destroying decay organisms which react differently to various chemicals, so that a toxin which is highly effective against one species offers only a comparatively low inhibiting force effect upon others. Creosote consists of a mixture of many different ingredients, and its value as a wood preservative is said by those who have most carefully studied and analyzed its properties, to be due to this association of components, no one of which by itself will serve the purpose.

The advantage in a wood preservative of a mixture of chemicals with properties diversified enough both to meet all the physical requirements and to furnish protection against all forms of fungus, which seems evident enough after it has once been demonstrated, was only arrived at after long, pains-

taking experimentation. But once the art of wood preservation had emerged from the dark ages of ignorance as to the true nature of wood and its diseases, the industry proceeded to develop the solution of its problems on scientific lines, so that now

The grade mark of quality lumber. Each piece of Wolmanized lumber being stamped with steel stencil after treatment and inspection

its products can be purchased with assurance and depended upon to produce the promised result. Now it is possible to treat timber with a clean paintable preservative so as to give it a life equal to what is required for permanent structures. Only it must be real wood preservation with neither the character of the preservative nor the method of its application slighted for the sake of false economy in the purchase of protection.

Wood Substitutes Unsatisfactory

Infecting spores are everywhere present, and since moisture and warmth are the only two elements necessary for their growth, pulp and paper mills are peculiarly liable to the destructive effects they produce in untreated timber. The inclination amongst mill owners and designers has been to stand the expense of using something else in place of lumber. Unhappily the substitutes have generally brought all sorts of new difficulties and many of them have failed to meet the expectation of permanent trouble-free elements of construction.

That is what wood preservation now offers the mills—a building material in which all of the good properties have been maintained, without introducing any objectionable features, but with the hazard of early decay definitely removed.

Expansion of Wood Treating Industry

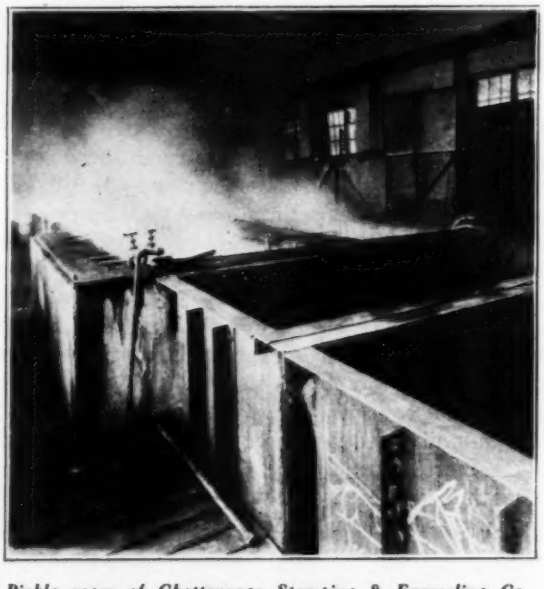
As to the future of wood preservation, its present status and the growing appreciation of the great economic service it renders leave no doubt but that it is destined to be one of the basic industries. Already plants are multiplying, equipped to supplement the creosoting of railway ties with treatment of commercial lumber and timbers suitable for industrial construction, and millions of feet of Wolmanized lumber are being installed in roofs and floors of mill buildings for machine hoods, decking of platforms and docks and as bridge timbers, flooring and rails, ice house and drykiln buildings.

Co-operation with Paper Industry

Like the pulp and paper industry, the wood preservative industry is dependent upon a continuing supply of suitable forest products and is keenly interested in forestation. But it is not only in an indirect way that co-operation is indicated. In European countries, for instance, the larger companies engaged in the production of poles for telegraph, telephone, light and power transmission lines, by a simple arrangement of multiple saws, cut the tops in a single operation of trimming the pole to length, into the exact length for pulpwood and supply a considerable quantity of such material to pulp mills.

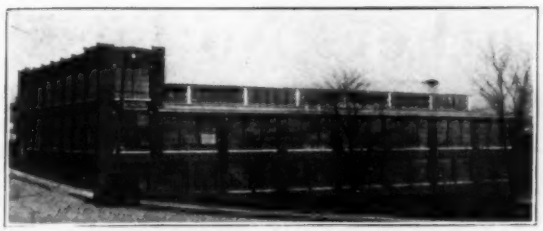
Wood Preservative Art Scientifically Advancing

In a hundred laboratories men are at work studying the microscopic structure of wood, poring over the movement of liquids within it, determining exactly what takes place during seasoning, how water enters and how it behaves in the cell walls or in the tiny interstices between them, and how moisture leaves the wood again. Chemists are testing every known material and even concocting some new ones in search for even better preservatives. Controversies go on over the possibility of using newly suggested compounds and no one can foretell what strange discovery may be made tomorrow or next



Pickle room of Chattanooga Stamping & Enameling Co., Chattanooga, Tenn. Wolmanized lumber as roofing and flooring

year. But meanwhile we have good preservatives that have been tried and proven in service, and have been made commercially available to all users of timber, so that no longer is there any reason to risk the grave losses that rot may cause in untreated



Domestic Damp Laundry Co., Charlotte, N. C. Wolmanized lumber in roofing and sub-floors

timber structures, or to endure unnecessary wasteful expense in the use of wood substitutes to avoid it.

Example of Treated Mill Roof Economy

It is difficult to cite the economic value of treated lumber in general terms. The following example of a special instance will perhaps better illustrate the values in question, assuming the roof of a new paper mill requiring 2,000,000 board feet of 3″ × 8″ dressed lumber. While the life of such lumber untreated may be six to eight years, extensive repairs may become imperative within three years. Considering the disturbance of manufacturing operations, constant repairs to a roof in which bad decay has started may easily be more expensive than replacement after the seven year period. To secure even this much service from untreated roofing on a paper mill, experience has shown that a rather high priced grade of lumber with rigid specifications for heart wood must be employed.

The cost of heart Longleaf of this dimension in the Chicago market may be figured at $53.00 while dense yellow pine Wolmanized roofers can be had for $61.00 per 1000 board feet. We use this treated material for the purpose of the present illustration because it is peculiarly adapted to paper mill construction and is now being used extensively in textile mill construction where similar conditions prevail.

Installation of the bare wood roof may run to the equivalent of $15.00 per 1000 feet of lumber.

High Replacement Costs

The replacement of a roof however, while caused by the decay of the lumber only, involves more than merely the cost of the lumber and its erection. An acceptable composition roof covering for such a building costs $12.00 per square and 3⅓ squares cover 1000 board feet of 3″ thick roof. For the new covering, therefore, the equivalent of $40.00 per 1000 ft. of lumber replacement must be added. Flashing has to be renewed, which, at 50c per lineal foot in place, adds $7.00 per 1000 feet. Cost of taking off and removing the covering and the decayed boards adds another $20.00 per 1000 feet.

With these costs, taken from actual contract prices and bids, we may set up the comparison of treated and untreated roofing for a 20 year period thus:

ROOF OF UNTREATED LUMBER

First Period—		
Long Leaf lumber	$ 53.00	
Erection	15.00	$ 68.00
Second Period—		
Removal after decay	$ 20.00	
Lumber	53.00	
Erection	15.00	
New covering	40.00	
New flashing	7.00	$ 135.00
Third Period		$ 135.00
Total Expenditure per 1000 feet during 20 years		$ 338.00

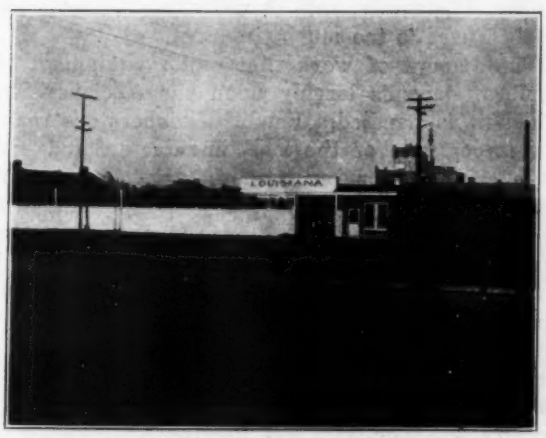
ROOF OF TREATED LUMBER

Wolmanized dense Yellow Pine lumber	$ 61.00	
Erection	15.00	$ 76.00

These are the figures per 1000 board feet of lumber and for two million feet of untreated material will amount to $676,000, compared to $152,000 when treated lumber is used.

Treated Ties Proved Preservative Economy

The incidental expense caused by decay in roof timbers presents a striking but by no means exceptional case. It is a fact that the railroads have conclusively demonstrated the economies of pre-



The entire outdoor coal yard of the Louisiana Ice & Coal Co., New Orleans, is constructed of Wolmanized lumber. George E. Wells Inc., Engineers, Chicago and St. Louis

servative treatment in the case of cross-ties, where the incidental expenses involved are a minimum.

Reduced to lumber content of a tie, the manufacturing cost is comparatively small; installation is not a big item; there is no particular interference with operation of the service when a tie is replaced, and

no other item of new material is called for. Yet the experience of 30 or 40 years has shown such great savings, that impregnation of ties with a preservative has become almost universal.

With this in mind it would seem that there is hardly an application of lumber for permanent or even semi-permanent service in the construction of a paper mill but should as a matter of sound practical economy be given a first class preservative treatment.

"A Rolling Truck Gathers No Loss"

Idle Time Destroys Motor Truck Economy—Good Routing and Right Equipment Necessary—How Time Studies Pay

By ERNEST A. SAUNDERS

PAPER manufacturers who are using fleets of motor trucks will be glad to learn that a nation-wide investigation, just completed by a group of independent delivery engineers, points the way to the biggest single factor of waste control in the delivery end of a paper mill's business.

This investigation, which inquired into the variable items of cost which are responsible for the great differences in the figures between various concerns, revealed that one item was far above all others in influencing waste. This item was Idle Time. In idle time, the summary of the investigation points out, the average truck owner finds the most destructive single influence upon truck overhead cost.

Time studies covering a large number of installations throughout the country show that the motor truck's average performance with load is usually four hours or less a day, six days a week, two hundred and eighty days a year. This is a truck usefulness of 20 per cent of its continuous performance ability. Certainly, this is not efficient transportation. There is too much time lost.

The amount of work that motor equipment can perform depends largely upon the efficiency with which it is handled. Few truck operators realize the importance of the lost time factor, and what it is costing them every day. How many traffic managers have set out to study at first hand what is a satisfactory day's work for a truck? How many traffic managers have ridden all day on their delivery vehicles, making time studies of the vehicle, the driver, and the helper? The question of the lost time factor is worthy of earnest consideration. It usually contributes more toward operating costs of motor vehicles than do the items of depreciation, repairs, gasoline, etc., put together.

Remedy Lies in Time Studies

How shall we improve this situation? The best way is to make a time study of the truck's operation. An analysis of the time during which the truck is not in motion will quickly show why the truck is not earning more money. This unproductive time should then be cut to the minimum by endeavoring to improve the loading and unloading conditions, as well as eliminating the other delays which are made apparent by the time study. This will permit the operator to arrive at a standard trip time against which the daily record of operation should be checked.

In making studies of individual cases, it has been found that the lost time factor can be reduced, and other savings effected, and therefore hauling costs lowered, by improving upon the following six important points:

1. Type and size of vehicle.
2. Loading and unloading conditions.
3. Type of body and auxiliary equipment.
4. Routing and dispatching.
5. Proper cost records.
6. Maintenance methods.

The six items mentioned above are of consequence, regardless of the type of transport equipment used. They are, however, of greatest importance when gasoline trucks are used, since the gas truck has a larger work capacity than the electric truck or horse-drawn truck. Having a greater work capacity, it will make the most money for the owner if operated efficiently. Being assured of efficient operation of having reduced the lost time factor to the minimum, it is then in order to make cost comparisons and find out what type of equipment should be used.

Of the truck as a transportation unit little need be said as it is the first unit to be used and is probably the most generally suitable.

However, a great many problems can be handled more efficiently by specialized adaptations.

Where the loading time, the unloading time, or both, make up a large percentage of the truck's maximum working time, the motor truck works at a very small percentage, from 30 per cent to 50 per cent of its possible efficiency.

When the cost of the truck is considered, the hours wasted in standing at a loading point amount to a considerable volume in dollars. By using demountable bodies, these hours can be salvaged and converted into profit.

In the use of this method, platforms are fitted with cranes to lift the bodies from the truck and onto the loading platform. Here they are packed by the

loading crew, there always being fully loaded bodies to be transferred to the truck, which needs to wait only a short time before resuming its business of hauling. This method, which can be applied in any number of variations, has been tried with success.

However, a method of attaining the desired iscreased mobility of power unit, far broader in its application to the problem, is the tractor-truck and the trailer method.

Generally speaking, the trailer method is employed when any one or a combination of three conditions are encountered.

First, the trailer method is indicated when the truck spends a considerable portion of its time loading and unloading. A compound transportation unit, flexible in its application to work is suited for keeping engine and man power profitably employed a maximum percentage of the working time.

Second, when it is expedient to increase the average load, and comply with highway laws limiting load per axle.

And, third, when there is the necessity of adapting the trailer to loads so awkward in shape, bulk, or weight that the motor truck cannot profitably handle them, the trailer can be designed to meet the most exacting load specifications.

Wherever present trucking facilities are not adequate and where the loading time is large, the trailer method will obviously save transportation costs by increasing efficiency, because practically 100 per cent of the working time of the motor units is utilized in hauling. If the shipping and delivery points are constant and delivery schedules are maintained, enormous savings are possible and ratios of from three to six trailers and semi-trailers to one motor unit are effectively employed.

The crux of the problem is the idle time spent by motor trucks while loading or unloading. On this it may be depended, the trailer method will keep the motor unit constantly busy.

A Larger Pay Load

The second big saving that can be made in transportation costs, and where the trailer method is remarkably effective, is by increasing the average load. Overloading motor trucks in order to haul more goods at one time is a dangerous means to this end, even where road laws will permit. But with the semi-trailer method the over load is carried principally on the extra two wheels that the trailer provides, or, in the case of the four-wheel trailer, entirely on its own wheels.

The semi-trailer, however, provides a means of doubling the load without exceeding the legal limitations on axle loads.

Where road and grade conditions permit, a combination of tractor trucks, semi-trailers and four-wheelers can be effectively employed.

The increase in gasoline consumption for a tractor-truck and semi-trailer over a truck of the same power as the tractor is approximately 15 per cent, yet the load hauled can be doubled.

All of the advantages of trailers in transportation do not lie in increased mobility and capacity. There are many trailers that prove highly profitable investments although they are but seldom used.

A tremendous aid to industry is the special trailer, designed to handle loads that are awkward by reason of extreme weight, unusual shape or immense bulk.

Instead of the special truck chassis, it is possible to purchase a special trailer at a comparatively negligible cost. And it is not necessary to buy a costly motor unit for each special body.

Then, again, the pay load carried on these specially designed trailers can be twice or three times that possible with the truck.

And yet, again, the decreased effort to load and unload unwieldly loads to and from trailers is often a sufficiently important item alone to make up for the cost of the trailer.

The vocational use for special trailers is no unimportant subdivision of the method. Compared to the great utility of such a device its first cost and upkeep are very small.

Many transportation executives, on an analysis of their problems could find uses for individual trailers. Some organizations could cut costs to an absolute minimum by a very simply executed design.

Standard Cost Methods

It is only in recent years that proper attention has been given to the question of securing the real cost of delivery equipment. Without a standard cost system, comparative figures do not mean much. Unless costs are figured on the same basis and in the same manner a comparison of these figures will cause endless confusion and argument.

The ideal solution of this problem would be the adoption of a standard set of cost keeping forms by associations. With all members using the same method and including the same items, a comparison of cost figures would mean something. If a member round his cost above the average, he could quickly find out what items were to blame and then determine whether or not they were justified.

There are two widely used truck cost systems. The National Owners Conference, Inc., of Chicago, and the cost system, profused by the Chilton Class Journal Company, of Philadelphia. Both of these forms cover the same basic items. If they do not quite fit into particular businesses as they stand, they at least can be used as a guide in preparing one that does. The important thing is to be sure all items are covered in the same manner.

Having checked up on the efficient operation of the transport equipment and made sure costs are

(*Continued on page* 830)

Current Thought by William Sibley

Financing Co-operative Advertising

WHILE there are no accurate statistics on the subject the writer knows, from personal experience and contact, that a great many needed co-operative national advertising plans have died "a-borning" simply because the industry's leaders did not know how best to finance the project. The paper industry should not make that mistake—when and if the advocated plant crystallizes.

Another experience the members of the A. P. P. A. might well take benefit from has to do with the length of time ordinarily required to get started, after the plan has been accepted. In the case of four associations that the writer knows personally, it took from two to three years for the first advertisement to appear—after the co-operative plan had been fully approved. Many associations who find themselves actively at the work of advertising one year after approval of plan count themselves lucky. There is no good reason why a similar delay need be endured by the paper industry. Indeed there are many reasons why such a delay should not be tolerated.

Unnecessarily long delays in starting the actual operation of an accepted plan, and improper or unsatisfactory financing have caused more co-operative plans to peter out and have driven more high hopes onto the shoals of disaster than any other known factors. That the paper industry may have before them the experience of others as a guide—and that they may have this guidance early enough to fully benefit thereby, I want to set forth some of the points outlined in Harry Merrell Hitchcock's masterly article in a recent issue of Printer's Ink. So important are some of the points advanced and discussed that I feel their full record here will serve the industry an appreciable good when finally a co-operative plan is adopted.

Mr. Hitchcock points out that the two methods for financing co-operative advertising are:

"A—By wholly voluntary contributions (that is, leaving entirely to the individual member firms how much, if any, it is to contribute, when it is to contribute, and how long it is to go on contributing.)

"B—By contributions according to a definite quota; members being asked to commit themselves in more or less binding fashion (ranging from verbal pledges to the signing of a legally enforceable contract) in advance to make payments according to a definite schedule, usually for a term of from two to five years. The individual quota may be determined as follows:

"1—By some basis of relative capital value (assessments based upon invested capital in dollars; square feet of factory floor space; total inventories; units of plant productive capacity, etc.)

"2—By assessments proportioned to net earnings.

"3—By assessments based in some form upon gross earnings (gross in dollars; assessment per unit shipment, etc.)

"No sweeping condemnation is possible of any of these plans, or variations of plans. After all, the only satisfactory test of a financing plan is: 'Did it work?' and investigation shows that at least one co-operative advertising program may be found which succeeded at least fairly well, under each plan classified. On the other hand, a plan which has only one or two records of even moderate success compared with a considerable number of unmistakable failures, must be accepted as at least a poorer plan than one whose record is of almost uniform success."

He then discusses what is considered success in advertising. In some campaigns all felt that they have gotten their money's worth, seeing direct returns from their outlay but stopping before they reached their objective, losing interest and abandoning the whole plan, and with it the residual investment in the good will and popular interest they had built up. To be really successful, a co-operative plan must be gotten under way promptly and kept up steadily with increasing effectiveness for a number of years and be still going strong.

The Various Methods

The purely voluntary methods of financing which comes out of enthusiasm of the moment may not be a failure in securing funds, but it depends upon sustained methods. Most conspicuous among these he cites the campaign of the National Paving Brick Manufacturers' Association, which is still going strong. Another of the trade associations that have been successful with the voluntary method is "Say It with Flowers" campaign, and a third the National Association of Ice Industries.

In the case of another prominent association, it was only after nine years of practically futile effort

with the voluntary method that a change was made to a definite quota plan, and within slightly more than a year the program was under way, and the first advertisements appearing.

So far as Mr. Hitchcock could discover, this completes the tale of co-operative advertising plans based upon no definite quota, which are still capable of showing breath on a mirror.

For some reason, very few of the plans, in which any sort of definite quota is set up, employ the invested capital as a basis for calculating it. Just why is not clear. There is usually much less objection to disclosing the firm's capital situation than to making known either its gross or net business; and this objection has been a stumbling block in the path of innumerable campaigns, as is shown by the device described by Mr. Hicks as used by the Greeting Card Association—one of many such employed for the same purposes; to make it possible for members to contribute without divulging what they consider deeply confidential information.

There have been various sporadic attempts to determine quotas on the basis of relative factory floor space, number of machines in operation, etc., which belong to the capital quota category, but none of which appear to have had any success.

Net Sales Quota Plan

Of the few associations using this method, several barely got to the stage of actuality in their advertising plan. A careful study of the causes of each of these failures, however, did not show that the financing plan was to blame. On the contrary it developed plenty of reasons for collapse, they having little or nothing to do with that part of the scheme.

The American Oil Burner Association has found the scheme successful as far as it has gone. This success is attributed to prompt action taken in putting it in operation. The plan is outlined briefly:

" 'All members were asked to bind themselves in advance on the basis of one per cent of their net factory sales for the preceding year. It was agreed among the 15 manufacturers who first met and considered the plan that subscriptions would not become binding unless a minimum amount was secured. The minimum was considerably exceeded.

" 'Our present plan is the same as was used in the beginning. Since it worked satisfactorily, it seems likely that it will be continued.' "

Not only the overwhelming majority among co-operative plans based upon definite quotas, but the overwhelming majority among all such plans, determine the quota in one way or another by gross volume of business. This may be done either by a percentage assessment upon the gross volume in dollars, or (the commoner method) by a flat assessment of so many cents or dollars upon each unit produced or shipped.

Before discussing some of these plans in detail, it may be desirable to point out one distinction affecting a very important group of co-operative advertisers.

Such institutions as the California Fruit Growers' Exchange, the Sun-Maid Raisin Growers and others are not merely co-operative advertisers, but co-operative marketers as well. Their advertising plans, therefore, much more closely resemble those of any other single large marketing organization than they do the true co-operative advertising plans, such as those sponsored by the paint manufacturers, the Portland Cement manufacturers and others, who advertise co-operatively but also both advertise and market individually.

One of the oldest continuous co-operative advertising campaigns is that of the paint trade, whose "Save the Surface and You Save All" has attained the honor of parody and employment by newspaper humorists—a certain sign of the success for any advertising slogan.

The plan for this campaign was first formally adopted by the American Paint and Varnish Association in 1917, but it was not until 1919 that the first advertisement appeared; a delay for which the war was at least partly responsible.

From the beginning, however, this association stuck to a determination to do no advertising at all, unless the campaign could be organized on at least a five-year basis. Subscribers were asked not to pledge any more or less definite number of thousands of dollars, but to sign a contract obligating themselves, for the ensuing five years, to contribute one-eighth of one per cent of their gross domestic sales, or a close approximation to that amount, to their central advertising fund.

The success of that plan is demonstrated by the fact that after eight years it is still operating without material change. Bills are sent on the first of the year, based upon the previous year's gross sales, and payments are made quarterly to the executive committee.

In all these successful campaigns, you find this same combination of a definite quota, no matter how determined, with a pledge or contract which assures the association of at least three and more often four and five years in which to develop its program and show results.

The National Lumber Manufacturers' Association, for example, set its figure in advance at $1,000,000 a year for five years, and called for contracts based upon so much per 1,000 feet of lumber produced by the mills, payable monthly, and covering the entire five-year period. There is no intention of stopping at the end of five years. Indeed the feeling of the Executive Committee is that by the termination of the contract period the value of the plan will be so evident to the membership that it will go right on from there.

Quite a number of associations finance all their activities by assessments based upon the volume of business, and do not separate their advertising funds from those employed for headquarters, overhead and other similar purposes. The American Institute of Steel Construction and the Common Brick Manufacturers' Association of America are among these, the former assessing its members for all expenses at so much per ton of steel fabricated in their plants; the latter at six cents per 1,000 brick sold.

This latter association has an interesting and ingenious plan for building up its advertising fund by increasing the assessment from year to year, adding

one cent per 1,000 brick annually until the total of 10 cents per 1,000 is reached, which the advertising committee considers will enable its program to reach full efficiency.

The National Confectioners' Association sets members' quotas at one-fifth of one per cent of gross sales, and asks for pledges on a three-year basis; but has not found it necessary to impose the rigid rules or enforce the contracts which have been adopted by other associations mentioned.

" 'We are still working on this basis, and there have been no changes in our methods,' writes H. R. Wilson, advertising director. 'All members paid their pledges promptly, with few exceptions, and our condition has been most satisfactory.' "

One of the oldest, and also most interesting, cooperative advertising stories is that of the Hardwood Manufacturers' Institute. This had its beginning in 1913, when a group of Southern hardwood lumbermen got together and formed the American Gum Lumber Manufacturers' Association for the purpose of promoting the sales of that then generally despised wood. They started their advertising with an assessment of 10 cents per 1,000 feet of gum lumber produced.

Substantially the same plan is still followed by the present institute, the only changes made in the finances having been various shifts in the amount of the assessment levied, due to circumstances. The plan was extended from gum to oak, and later to all hardwoods, and the best proof of the inherent vitality of a soundly conceived and properly financed advertising plan, is found in the fact that it survived the dissolution by the Government, by a suit brought under the anti-trust laws, of the original American Hardwood Manufacturers' Institute.

If the paper industry will accept as their guiding principle the successes of other organizations, much delay and dissatisfaction, if not utter failure, may be averted.

Publication of the June Safety Scores in the 1928 Contest will be withheld until announcement is made of final standings at the Safety Congress in New York City next October.

Wood Preservation

(*Continued from page* 825)

complete and accurate, it is a relatively easy matter to select the proper units from the three types of equipment available; i. e., the gasoline truck, electric truck and horsedrawn vehicle. The selection, of course, is made on the basis of cost per unit of material hauled, bearing in mind the factor of satisfactory service.

Viewing the matter in a large way, there is rather a definite line between the field of the horsedrawn vehicle and electric truck and that of the gasoline truck. The horse an delectric truck are peculiarly adapted to the short-haul, frequent-stop field. They cannot compete with the gas truck in any other field due to their limited speed and mileage range. In other words, they lack the work capacity of the gas truck. The gas truck is economically supreme in its own field.

The dividing line between the horse and electric truck is not so clearly defined. The horse is forced to dispute its place with electricity. In most cases the horse will show an indicated slight saving when the daily mileage is eight or ten. In such cases, most of the time of the working day is consumed in loading or unloading or by traffic congestion. If these limiting factors could be improved, the electric truck could be used and greater daily mileage per vehicle could be attained. The electric truck due to its greater work capacity would show a saving. In most cases the loading and unloading situation can be solved but the traffic congestion is not so readily handled.

If the cost of traffic congestion and the slowing up of motor vehicle traffic, caused by horsedrawn equipment, was translated into dollars, it would reach a staggering total. Our cities cannot afford to allow it to continue much longer.

Summarizing, there are three things that the transport user should check carefully; first, the type and size of equipment; second, whether or not it is being operated efficiently; third, the cost system used. Close attention given to these items will save the operator many dollars.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of June 30, 1928

Participant	Mill	Rate	Participant	Mill	Rate
Kimberly-Clark Co.	Neenah	0	International Paper Co.	Livermore	.40
International Paper Co.	Riley	0	Robertson Paper Co.	Montville	.44
United States Gypsum Co.	Gypsum	.004	Union Bag & Paper Corp.	No. 5	.46
Kimberly-Clark Co.	Atlas	.03	Union Bag & Paper Corp.	Allen	.52
International Paper Co.	Webster No. 9	.11	Lincoln Pulp & Paper Co.	Lincoln	.53
Gardner & Harvey Co.	No. 3	.16	Lincoln Pulp & Paper Co.	Lybster	.64
The Upson Co.	Board	.16	Itasca Paper Co.	Minnesota	.63
Gardner & Harvey Co.	No. 1	.17	Mead Pulp & Paper Co.	Peerless	.81
Adams Bag Co.	Chagrin Falls	.23	Union Bag & Paper Corp.	Fenimore	2.36
Bergstrom Paper Co.	Neenah	.25	Northwest Paper Co.	Brainerd	2.46
Gardner & Harvey Co.	No. 2	.29	Lincoln Pulp & Paper Co.	Sulphite	2.96
International Paper Co.	Winnipiseogee	.38			

Group A—Nekoosa-Edwards Paper Co., Combined Mills	.57	Group B—International Paper Co., Niagara Falls	.26

The Export Trade Act and the Paper Industry

THE following statement as prepared by the American Paper and Pulp Association will be of interest to paper companies which may be considering the development of export trade for foreign markets.

It is increasingly evident that some additional source of paper consumption is needed to take the surplus production of American mills from their domestic markets. This surplus cannot be marketed profitably in the domestic markets at present nor is there any likelihood of a radical change in their situation in the near future. As a result price cutting and other profitless concessions are resorted to so that the mills may be kept running at as high a percentage of capacity as possible. The inevitable results of such practices are obviously over-production, demoralized markets and unprofitable business.

There is every possibility, however, that a profitable export trade in paper could be built up, which, in the course of time, would utilize a substantial part of the productive capacity of American mills. At the present time the United States is not an important factor in the world paper trade markets, with export of less than $30,000,000 worth of paper annually. This is less than one-half of one percent of the value of our total paper production. The quantities of paper exported are not sufficient to absorb much of the industry's idle capacity, and consequently give little relief to our present profitless over-production.

Export Trade

Export trade is not easy to attain. The development of markets and the promotion of sales in foreign countries is even more difficult than in the domestic markets. But despite difficulties, many companies and industries have built up profitable business abroad.

Those who have not engaged in foreign trade often feel that only the large and well financed companies are in a position to enter foreign markets and that the small company, particularly the small company which is located in the interior cannot meet the difficulties and expenses involved in obtaining foreign markets. This is not so. The Export Trade Act of 1918, sometimes known as the Webb-Pomerene Act, offers an opportunity by which the expenses and difficulties of establishing foreign trade may be overcome without too great a burden upon any one company and the possibilities of foreign trade may be opened to all manufacturers regardless of size of output or location of mills.

Purposes of the Export Trade Act

The Export Trade Act was planned and enacted to assist in the stabilization of American trade after the World War. Its primary purpose is to facilitate the export of American goods, to encourage exporters, and to enable them to compete with trade combinations of other countries in foreign markets.

The act provides for the formation of associations for the sole purpose of export trading. Such associations are exempt from the Sherman anti-trust laws, and from certain provisions of the Clayton Act, provided the associations do not act to restrain trade within the United States, to restrain trade of any domestic competitor, to enhance or depress prices or to lessen competition in the United States.

Export Trade Associations

During the fiscal year ending June 30, 1927, fifty-five export associations filed reports with the Federal Trade Commission. Member companies of these associations represent nearly 1,000 mills, mines and factories, located in twenty-nine states.

Exports by Webb Law associations increased from $140,000,000 in 1924, to $165,000,000 in 1925, and to more than $200,000,000 in 1926. All sorts of commodities from raw materials to manufactured goods are exported and to every corner of the globe.

Advantages of the Export Trade Act

(From the Annual Report of the Federal Trade Commission, 1927)

"Export associations report many advantages derived from operation under the act. Through co-operation of the member companies, selling costs have been reduced; grades, contract terms and sales practices have been standardized; the quality of products sold has been improved; prices have been stabilized, and cut-throat competition in the export trade eliminated. Joint advertising, consolidation of shipments in order to reduce transportation expense, co-operative inspection service, and facilities for handling claims by the association, have all resulted in economy in operation. In some industries, sales on consignment have been eliminated, in others the policy of selling direct to foreign consumers has made it possible to obtain a reasonable profit on export business.

"The expense of developing new markets, and of collecting trade and credit information, may be divided among a number of member companies without heavy tax on anyone. The association is in a position to bid on and secure large orders for shipment over a long period, which one company could not handle; and it may fill orders for a variety of grades, styles, and dimensions by allocation among the member companies."

Organization of Export Associations

The form of organization of an Export Association varies with the needs of the industry or product. Many of the associations are incorporated under state laws. Many others, however, are unincorporated, being merely associations by agreement. The greater elasticity of the latter method is favored by many associations.

All that is necessary is to form an association and to draw up an agreement. Such an agreement should specify:

1. Purpose of organizing:
   To engage solely and actually in the export of .....from the United States to foreign nations, under of the Export Trade Act.
2. Enumeration of activities of the proposed association, such as to export goods, to develop foreign markets, to jointly promote sales, to fix common export prices, etc.

After the association has been formed a copy of its agreement, by-laws or charter if incorporated, together with the names and addresses of its officers, stockholders, or members and of its offices, should be filed with the Federal Trade Commission. **It is advisable to consult with the Commission before the agreement is completed to assure full compliance with the law.**

Types of Organizations

(From Commerce Reports, Dec. 22, 1924)

Various forms of organizations have been developed each adapted to the particular industry which it is designed to serve. As illustrative, the following may be cited:

1—One of the first to organize under the act was an incorporated association exporting the manufactured products of six stockholding companies. As described by the corporation: "We sell the specific products of the several corporate owners, ship the merchandise, collect for same, and remit proceeds to the manufacturer producing the merchandise."

2—A corporation, organized for the purpose of selling the products of the stockholders to exporters for shipment to foreign markets, sells f. a. s. delivered at ship's tackle. This company divides its orders upon a system based upon a per-

centage of "quota" assigned to each stockholder, taking into consideration the manufacturing capacity, location, facilities for loading and the quality of goods produced. The running expenses of the company are covered by a 2.5 per cent commission on sales.

3—Ten mills, which formerly had no organization or facilities by which export trade could be carried on, associated themselves in an unincorporated association with an eleventh concern which had a well-developed export department. The eleventh member was appointed sole and exclusive agent for export sales. Sales are consummated by the eleventh member as agent, and orders received are allocated among the members according to predetermined percentages.

4—A corporation organized to export raw materials maintains selling and distributing agents in certain foreign countries. Stockholding members agree to sell for export only through the corporation. Orders are allocated on the basis of stock holdings and are filled by the members, with arrangements for freight on standard gross form of charter party, and insurance in the name of and payable to the corporation as owner. Payment is made by the foreign purchaser to the corporation on presentation of draft with invoice shipping documents.

5—An incorporated association, with exclusive agents in foreign countries, handles all the export business of its mill stockholders, under a membership agreement which provides for monthly reports from each member to the association, covering the amount and character of stock available for export. On the basis of these reports orders are allocated. The price received by the member mill, as fixed by the officers of the association, is f. o. b. cars at port designated, less freight to port, less a percentage to cover operating expenses of the association. Provision is made for division of net profits by declaration and payment of dividends to stockholders in proportion to goods sold by them to the association. A system of inspection has been established for all goods exported, the bonded inspectors appointed and paid by the association.

6—A corporation with headquarters at seaport represents eight stockholding companies, most of which are located in inland points. Sales are made by the individual stockholders. The corporation attends to billing and forwarding of goods, arranges for storage and transportation, negotiates for freight rates and insurance, and supervises shipment of the goods to the foreign buyer. It also sends representatives abroad to study conditions, promote business, arrange agencies, and solicit orders for the stockholding members.

7—A corporation describing itself as "a general agency, commission, factorage, and brokerage business" obtains its orders through its branch office in Argentina or its 45 agencies in other countries. The corporation purchases from its stockholders and, where advisable or necessary, from other producers as well. Stocks are accumulated in suitable ports for export to foreign countries and sales are made c. i. f. to the foreign port.

8—An unincorporated association, organized for the purpose of exporting raw materials, operates through a "council", which consists of one representative for each of six member companies. This council fixes minimum prices and form of contracts governing export sales, the orders for which are obtained by the president of the association, either direct from the consumer or through agents abroad, and are allocated by the president among the members of the association according to a predetermined percentage. All expenses of the association are borne by the members at the time the expense accrues in proportion to their respective percentages.

9—This corporation is under contract to sell and market to the best possible advantage all of the products of the stockholders (manufacturers) suitable and intended to export, and to equitably distribute, allot, and apportion its orders and demands to its members so that each will receive a just proportion of the corporation's business, at all times having due regard for (a) the amount of capital stock held by each manufacturer, (b) the character of the stocks of each manufacturer suitable or intended for export, (c) the nature of the order, (d) the time of delivery, and (e) the capacity and ability of each manufacturer to produce or make shipment.

10—An unincorporated association sells to foreign buyers through its "export committee," which endeavors to market all the goods offered for export by the members of the association, at the best prices obtainable, in as fair and equitable a manner as possible, without discrimination between marks and brands, and without preference as to one member over another. The terms of sale are cash against documents f. o. b. seaport. The general overhead expenses of the association are borne pro rata by the members whose product is sold upon the basis of their actual sales.

Interpretation of the Law

Section 5 of the Export Trade Act provides that if the Commission shall have reason to believe that an association or any agreement made or act done by such an association is in violation of the law, the Commission shall conduct an investigation, and thereafter make recommendations for the readjustment of the association's business. If the association fails to comply with such recommendations, the Commission may refer the matter to the Attorney General of the United States for such action thereon as he may deem proper.

No formal investigations have been made under this section, and the law, therefore, has never been before the courts for interpretation; nor has the Commission issued any formal rulings interpreting the provisions of the act.

References

The following short list of references may assist those who wish to study further the possibilities of developing foreign trade through export associations under the provisions of the Webb-Pomerene Act.

(1) Foreign Commerce Hand Book, U. S. Chamber of Commerce, Washington, D. C.; (2) Doing Export Business, U. S. Chamber of Commerce, Washington, D. C.; (3) Glossary of Paper Terms and Instructions to Exporters, U. S. Department of Commerce, Washington, D. C.; (4) American Export Trade, by Notz & Harvey, Bobbs-Merrill, pub., Indianapolis, Ind.

I. P. Co. Now Has Over 900,000 H. P. Developed and Under Construction

The starting of the first generators in the Paugan, Quebec, hydroelectric plant of Gatineau Power Co., a subsidiary of International Paper Co., and the approaching completion of the Grand Falls, N. B., and Kent's Falls, N. Y., hydroelectric developments, draw attention to the great quantity of power which International Paper Co. has developed and under construction.

In the United States, Canada, and Newfoundland, International Paper Co. and its subsidiaries now have 913,100 horsepower already developed and in process of construction nearing completion. An idea of the size of this power may be had from the fact that it is three and one-half times the developed capacity of the Muscle Shoals project and over 60 per cent greater than the developed power on the American side of Niagara Falls.

Of the 913,100 horsepower of the company, 436,000 horsepower—nearly one-half—is on the Gatineau River, in the Province of Quebec, in the hydroelectric plants of Gatineau Power Co. 126,600 horsepower is in the developments of Gatineau Power Co. on the Ottawa River and its tributaries. The Grand Falls, N. B. station of St. John River Power Co. will have 80,000 horsepower. International Power and Paper Co. of Newfoundland, Limited, has a hydroelectric plant at Deer Lake generating 98,000 horsepower. In the United States, International Paper Co. has hydroelectric plants on the Hudson, Saranac, and Connecticut Rivers of a combined capacity of 62,500 horsepower.

The aggregate of these hydroelectric developments is 803-100 horsepower, and the balance of the power of the company—110,000 horsepower—is in hydraulic power plants in its pulp and paper mills. None of these figures includes any of the extensive power developments of New England Power Ass'n, in whose common stock International Paper Co. has a very large interest.

American Chemical Society Institute

Chemists Discuss Research as Aid to Agriculture and Chemistry of Cellulose at Second Annual Gathering

INDUSTRY is constantly reaping the fruits of research, and in the front ranks of those scientific bodies rendering invaluable contributions to business and humanity at large, stands one whose followers have been characterized by Dr. Arthur D. Little as members of the "Fifth Estate" —the profession of chemistry.

The American Chemical Society Institute was founded to provide with recreational surroundings a meeting ground where chemists may become associated with others in the profession, and to afford the opportunity for instructive lectures and round table discussions.

Northwestern University, Evanston, Ill., was chosen as the setting for the second meeting of the Institute which began July 23 and will end August 18, 1928. The lecturers for the Institute were selected from among the eminent chemists of the world, and the program abounds with subjects of vital interest.

At the opening session, July 23rd, the Institute was warmly welcomed to the university by Walter Dill Scott, president, followed by addresses from S. W. Parr, president, and Charles L. Parsons, secretary, American Chemical Society.

Chemistry and Agriculture

Dr. Frank Whitmore, director of the Institute spoke on the opening day of the present relation of chemistry to agriculture. It was brought out that heretofore the agricultural chemist has been solely concerned with the problems of soil analysis and production of crops. He is now considering how new markets may be developed to make the farm produce larger profits.

George M. Rommel, agricultural consultant and formerly an expert in the Department of Agriculture in Washington, gave a most interesting address on the subject "Survey of Past and Present Uses of Agricultural Products Other than for Food and Clothing". Mr. Rommel pointed out the importance of finding diversified uses for crop wastes, recounting the very large percentage of waste from crops in former years. He conceded that the present amount of raw material originating on farms as crop wastes which may be used for pulp and paper, for building materials, is enormous. What will it cost to get it to a point where it can be manufactured? What will be the cost of manufacture? What will be the value of the resulting product or products? Straw was at once time a common source of paper and some of the great paper mills began originally as straw mills. Wood put straw out of the running as paper stock. Now, wood prices have risen to such a point that straw, cornstalks, sugar cane begasse and other by-products are more or less in line once more as promising sources of papermaking materials.

Cellulose

The sessions on Friday, July 27th, were devoted to addresses and discussions on cellulose. Sir James Irvin, principal and vice chancellor of St. Andrews University, Scotland, and a widely recognized authority an chemistry, conducted a round table discussion on The Chemistry of Cellulose. Sir James is a forceful and fascinating speaker, and those in attendance at the Institute felt it a rare privilege to listen to his addresses.

In Industry—An interesting discussion on "Cellulose in Industry" was conducted by G. J. Esselen, Jr. It was brought out in the discussion that ordinarily research precedes development, but in the paper industry this has been reversed. Paper was manufactured successfully many years ago without a scientific knowledge of the process. Science is now delving into these processes which have been successful, endeavoring to prove them and set up scientific formulas to substantiate them.

Dr. L. F. Hawley, Forest Products Laboratory, Madison, Wis., compared the groundwood process of making paper with the chemical process. He stressed the importance of study and research along the line of making paper by the chemical process with less waste, and spoke of the experimental work which is being carried on at the Forest Products Laboratory.

In Relation to Agriculture—At the general conference session on Friday, there were several addresses on the subject, "Cellulose in Relation to Agriculture". A. W. Schorger, Burgess Laboratories, Madison, Wis., declared that forests and woodlots will in the future be valued in terms of pounds of cellulose, not board feet. Wood for structural purposes is being supplanted rapidly by other materials which are as good or better for the purpose, but for cellulose there is no substitute. Wood must be relied upon to furnish the bulk of the cellulose, particularly where the fibrous properties are paramount. Field crops as a source of cellulose should be view with conservatism, since many of the cellulose aggregates, particularly the pith cells, are so short as to be unsuited to the manufacture of paper products, for which most of the cellulose will be consumed for years to come. A well managed woodland will produce 2000 pounds of cellulose per acre per year, while the average yield from an acre of cotton is only 155 pounds.

An interesting lecture was given Friday evening, July 27th, by R. W. Thatcher, Massachusetts Agricultural College, on the subject "The Development of Agricultural Research". Mr. Thatcher declared as a result of the post-war period of overproduction, with excessive costs of production, distribution and marketing, there arose an active stimulus to research in economic science as applied to the business of agriculture, and also opened an immense field of research in the field of consumption of agricultural products as food for man and animals. The period of exploitation of new and developed natural resources, in his opinion, is now nearly over. As soon as the temporary post-war situation has disappeared, the need for careful scientific development of the possibilities of increased production and of proper utilization of the products of a nearly fixed acreage of agricultural land will become apparent. Also, the steady but rapid, depletion of the natural resources of raw materials for industrial manufacturing which have been produced by long centuries of undisturbed natural vegetative processes—lumber, coal, pulp fibre, resins, fuel oil and gas—is going to call for controlled production of these materials as a new phase of agricultural operations.

Civilization and Cellulose—Speaking on this subject, G. J. Esselen, Jr., of Boston, gave a most interesting and instructive address before the Institute on Saturday evening, July 28th. The speaker stated that cellulose is not only the most abundant material of the vegetable kingdom, but it is one of the most important materials on which man has relied throughout his development. He traced the making of paper from the early days in China several hundred years before Christ down to the present time, bringing out the different raw materials used, and lastly explaining the several chemical methods which have been developed owing to the processes of separating cellulose from the other constituents of wood.

Contract for Electrification of Paper Mills

Specialized electrification of two paper mills is indicated in the recent placing of contracts for two paper machines to be equipped with sectional electric drives.

One of these paper machines, a 248 inch Bagley and Sewall designed for high speed production and a range of speed of 300 to 1050 feet per minute, will be located in the Port Townsend, Wash. plant of the National Paper Products Co., a subsidiary of the Crown-Zellerbach Corp. The machine will be equipped with Westinghouse sectional electric drive and will embody all of the latest and improved features including the starting generator system, carbon pile type voltage regulators, and rotary contractor section regulating equipment. This will be one of the largest kraft machines ever built.

The other machine will be located in the plant of The Champion International Company at Lawrence, Mass. This is a 160 inch Horne book machine with wide speed range, 100 to 600 feet per minute. It will also be equipped with Westinghouse sectional electric drive of the same type as the kraft machine.

Vibration as Related to Industrial Lighting

By ALLISON J. THOMPSON
The Thompson Electric Co., Cleveland, Ohio

VIBRATION presents a very real problem in industrial lighting, due to the extremely delicate structure of the light-producing filament in the incandescent lamp.

There are six characteristics, or factors involved in vibration, viz:—wave-length, intensity, frequency, rhythm, direction, and the character of the vibrating medium—each of which has its own peculiar influence or effect upon the lamp filament, either by itself or in conjunction with one or more of the other factors. So it becomes essential to safe-guard the filament with respect to each of these factors.

There are two types of vibration which are particularly destructive to the lamp filament: the first, and apparently the most common, has a short wave-length with a high intensity, producing a sharp impact, jolt or jar which breaks the lamp filament—just as it is the sharp, quick blow that shatters molasses candy.

The second type of vibration has a very short wave-length of high and rhythmic frequency—producing a molecular agitation or disturbance in the lamp filament which in time will cause it to break—just as a piece of wire may be broken by bending it back and forth a sufficient number of times.

Shock Absorber between Hanger and Lamp; adapted for use with all models of the Thompson Hanger.

Vibration may be defined as an intermittent and more or less rhythmic reversal of movement, along with a resultant conflict between momentum and inertia.

When a ball is projected through space, if permitted to proceed until the energy of the projecting impulse is exhausted, the ball will fall to the ground, and nothing happens. This will correspond to one wave-length from one impulse. But if in the meantime the ball should strike something which stops its flight, the remaining portion of the wave-length will be shattered into fragments, which will proceed through the opposing body impelled by the unexpended energy of the original impulse, gradually decreasing in intensity until it is finally exhausted.

That is to say—vibration may be produced by a single blow or impact, as in the case just described, or by the operation of a power hammer in a forge shop, jarring the ground around it, or by the impact of a falling body, by an explosion, or by any sort of impulse which jars or jolts a resisting, elastic body or supporting medium. Vibration produced by any such means will die out as it proceeds in its course, like ripples on the water.

Or, it may be produced by a cumulative synchronism of impulses which will have the effect of augmenting the vibration whether it be caused by a dog trotting over a more or less flexible bridge, or by a series of impacts produced by machinery in operation. Such vibration will proceed through the structure, or supporting medium, developing a momentum until it attains its maximum, and then will die out as in the first instance. The intensity and frequency of the vibration will vary with the intensity and frequency of the vibratory impulse.

When the vibrating structure adjacent to the lamp is more or less compact and rigid, as in the case of various kinds of machinery, or other equipment, this second type of vibration may develop a very short wave-length of high and rhythmic frequency, exceedingly destructive to the lamp filament. In this case, however, it is obvious that the primary cause of the breakage is the rapid bending back and forth of the lamp filament, producing an alternation of stresses, rather than any sudden, sharp reversal of movement or impact, as in the case of a jolt or jar.

Vibration, as it proceeds along its course, will change its various characteristics according to its natural reaction to the characteristics of each medium through which it happens to pass.

(*Phantom View*)

The harder, more rigid or elastic the opposing body the farther the vibrations will carry—as may be illustrated by striking the end of a steel pipe with a hammer, and applying the same kind of blow to the end of a length of garden hose.

When a lamp is rigidy bracketed close to a vibrating heavy structure, such as a thick, solid wall or column of masonry or concrete, it will receive the full effects and force of whatever vibration is in the heavy structure. The vibration waves coming from such a structure naturally will be very short and will be more destructive to the lamp filament than longer wave-lengths of equal intensity. That is to say—the shorter the wave-length, at a given intensity, the more readily the filament will break.

It follows that the further the lamp can be removed from the source of vibration, and the greater the resilience of the supporting medium, the longer will be the wave-lengths and the less destructive will be the effect of the vibration upon the lamp filament.

A messenger wire is so pliable and resilient that it affords a very ideal support for a lamp, from the standpoint of protection against vibration—where that method of installation is practicable. About the only other method of protecting the filament is to insert some specially constructed, resilient element between the source of the vibration and the lamp. Many devices, known as 'shock absorbers' have been developed, which more or less effectively provide this desired protection.

As the principles applying to vibration will be the same on both sides of the resilient element, it follows that the weight of the lamp fixture is quite as important as the quality and design of the resilient element in the shock absorbers. That is to say, upon the principle that the heavier a body is, the stronger the vibration will have to be in order to affect it; so the heavier the lamp fixture is, the more inertia it will have with which to 'back up' or resist such vibration as may leak through the resilient element, just as on the other hand, the less the lamp fixture weighs, the more it will be affected by vibration.

For this reason there should be a proper balance or proportion between the resilient element in the shock absorber and the weight of the lamp fixture. The heavier the lamp fixture is, the larger the wire in the spring naturally must be, to give the lamp proper resilient support, and the greater will be its resistance to corrosion.

Inert stability, therefore, is a quality much to be desired in a lamp fixture, or in some element within the lamp fixture serving as a support for the lamp bulb—as in the case of a street lamp in which the bulb stands upright above the socket, with a stabilizing inner element supporting the socket and bulb within the lamp fixture.

A shock absorber should be simple in design, rugged in construction, and must be adequate for the purpose which it is to serve. There are many shock-absorbing devices on the market, but consideration is here given to that manufactured by The Thompson Electric Company, of Cleveland, Ohio. It is exceedingly simple in design, having but four parts—a spring and three malleable castings. Aside from a screw driver, there is probably nothing which will loosen a screw like vibration, and it was felt that so far as possible, they should be eliminated from the design of a shock-

absorber. There is not a screw or bolt in the Thompson device; yet the parts are so interlocked in the assembly that if the spring should ever become rusty and break, it would not be possible for the lamp to fall.

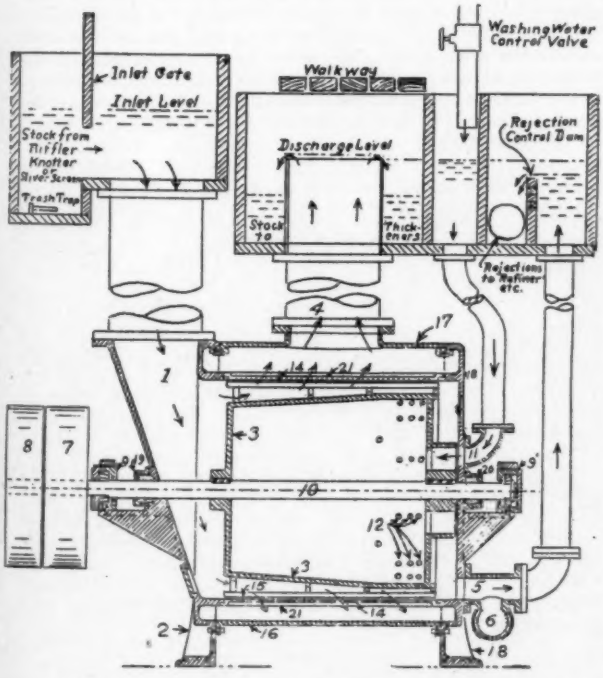
The spring is of conical, or bee-hive form, permitting the coils to nest down inside of each other, thus providing a floating pivoted support for the lamp fixture, regardless of the direction of the vibration, and a maximum of movement within a minium of vertical space. For this same reason, the spring will take care of a wide range of lamp-fixture weight.

The Thompson shock-absorber is in two models of similar design, but varying in size. Both models may be used either with or without the Thompson safety lowering switch, or hanger—a device which enables lamps to be lowered away from the electric circuit, so they can be cleaned frequently and thoroughly down on the ground, and without any climbing or electrical hazards.

A New Pulp Screen

A new design and combination of principles has been introduced in a new pulp screen of the outward flow type known as the Apmew screen, manufactured by the American Paper Machinery and Engineering Works, Glens Falls, New York.

A gentle screening action, passing only the best quality of papermaking fibre free from dirt and a continuous high



capacity are features of the Apmew screen. With the installation of the machine correct, the production of accepted stock is estimated as 50 to 60 tons per day consuming 25 to 30 horsepower.

As may be seen in the accompanying diagram, the machine has an outer casing mounted on end castings, one of which carries an inlet spout and the other the discharge connection for rejections and the inlet for washing water. There is an annular passage around the whole of the casing, the inside of which is composed of perforated screen plates. Inside of this cylindrical screening surface is a rotor, the conical surface of which is perforated for the passage of washing water, and on the outside of this surface, blades are fastened. The rotor is mounted on the shaft which revolves in Timken roller bearings. The speed of the shaft is 270 revolutions per minute.

The screen operates with all operating parts completely submerged in stock. The stock level at the inlet is higher than at the discharge; also, the level at discharge is higher than the rejections overflow.

The stock from the knotter, sliver screen or riffler enters through the inlet gate which controls the amount furnished to the screen. The stock passes into the screen inlet and fills the screen flowing into the narrowing passage between the screen plates and the rotor. The pressure due to inlet being higher than discharge level, gently forces the papermaking fibre through the perforations in the screen plates. The revolving of the rotor and its blades causes a suction which removes the matting of fibres and rejections from the screen plates, and thus, this gentle screening action 1600 times a minute causes the fibre to pass through, delivering cleanest stock.

As the rejections and fibres pass along the screen plates toward the rejection discharge, the rotor forces by centrifugal action, white water through the perforations in the rotor drum and washes the fibre from the rejections, permitting the fibre to pass through the screen plates. The cleaning of fibre from the rejections is controlled by the washing water control valve and by the rejections control dam.

Among a number of the excellent features claimed for the Apmew screen, are the following: Plates continuously self cleaning; stock free from foam, lumps and dirt; operation entirely enclosed—no spilling; no reciprocating parts—motion is rotary; no fresh water needed—screen uses only white water; no shower pipes to clog; design is simple.

The screen can be set on the floor and discharged above to any desired height—no foundation required. The drive may be direct connected to motor or belt driven.

Link-Belt Announces New 2-Yard Shovel

In recognition of a trend toward machines of greater capacity and increased power, Link-Belt Company of Chicago, Indianapolis and Philadelphia, has announced the addition of a full 2-yard capacity shovel to their line of crawler cranes, shovels and draglines. Heretofore, the largest capacity built by this company was a 1½ yard unit.

The Link-Belt K-55, as the new machine is known, is a powerful, heavy duty, all-purpose 2-yard machine, primarily designed for shovel, dragline, clam shell bucket, or trench shovel adaptations. All attachments are interchangeable without removing or disturbing the mechanism of the machine proper.

The K-55 in working condition is 12 ft wide overall at the lower frame; crawler treads are 36 inches wide. It can be driven with gasoline engine, electric motor or Diesel Engine.

Another Southern Mill for International Paper

The International Paper Company has commenced construction on a kraft pulp and paper mill at Mobile, Ala., which is located on Mobile Bay, an arm of the Gulf of Mexico. The new mill will have a daily capacity of about 170 tons of kraft paper and will be the first pulp and paper mill in the State of Alabama. The site of the new mill is 35 miles northeast of Moss Point, Miss., where the company recently acquired a modern kraft paper mill of a daily capacity of 100 tons of kraft paper.

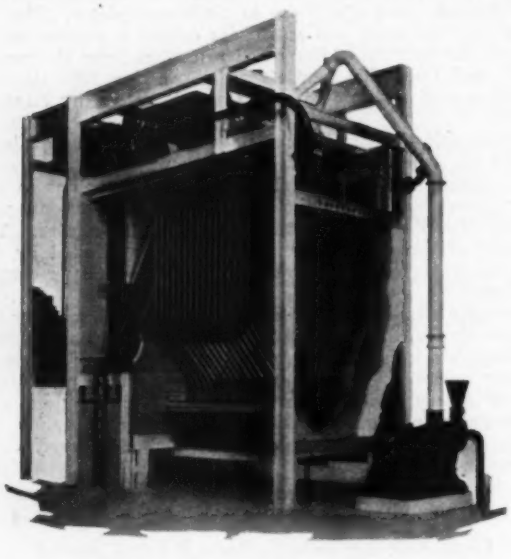
With the completion of the Mobile mill, the Company will have five modern kraft paper mills in Southern United States of a capacity of about 700 tons of kraft paper a day. The company is already the largest producer of kraft paper in the world.

The first water shipment of kraft paper by International Paper Company up the Mississippi and Ohio Rivers has just been made from Monroe, La., to Wellsburg, W. Va. The shipment consisted of a barge carrying 24 freight car loads of kraft paper made at the Bastrop, La. mills of the company to its Wellsburg mill for conversion there into multiwall cement bags. It is expected that this is the beginning of regular water shipments of kraft paper by the company,

not only to Wellsburg, but to Cincinnati, Pittsburgh and other river ports. This water movement of paper should add to the volume of business carried on in these cities.

Smithsonian Accepts Erie City Steam Unit Model

News in regard to pulverized coal is live news, and one of the latest items of news on this subject is that the Erie City Iron Works has built a 1/12 scale model of its Erie



City Steam Unit at the request of the Smithsonian Institute which has been accepted for permanent display in its Division of Mechanical Technology in the Arts and Industries Building at Washington, D. C.

The model, shown in the accompanying illustration, was built in the company's own pattern shop, and is so constructed that every detail of construction can be seen. It shows the application of the Erie City Seymour Water Cooled Furnace to the Erie City Three Drum Boiler with Integral Economizer and fired by the Erie City Unitype Pulverizer.

Paperboard Industries Ass'n July Meeting

The Paperboard Industries Association held its July meeting at the Clifton Hotel, Niagara Falls, Ontario, July 18 and 19, 1928. General and group meetings were held, and all sessions were interesting and well attended.

General Meeting—A general meeting of all groups of the association was held on the afternoon of July 19th. W. J. Alford, Jr., president of the association presided. President Alford submitted for the approval of the membership the report of the Executive Committee. This was unanimously adopted. The committee reported that a decree in favor of the association had been given in the suit brought against it by the Bradford Mill Supply Company. The committee also reported that a request had been received from a member of the Container Group that the association have its suggested trade practices reviewed by the Federal Trade Commission. This was the principal topic of discussion at the meeting, and was also taken up in the group meetings, resulting in a resolution which was adopted by the Association authorizing the president to appoint a committee to engage counsel and arrange for a conference with the Federal Trade Commission.

Folding Box Group—At the meeting of this group, Vice President Hinkle made the announcement that investigation by the Executive Committee revealed that while some of the manufacturers of suit boxes are members of the group, the majority of them are non-members. It was the sense of the meeting that a cordial invitation be extended to these manufacturers that are not members to attend the group meeting at the next session of the association in Chicago, September 19, 1928. The Statistical-Accounting Committee reported that the recommendations of the Folding Box Group had been transmitted to the Internal Revenue Department, U. S. Treasury, and the association's suggested standard rates of depreciation will no doubt be accepted with a few minor changes.

Paperboard Group—Vice President E. R. Hankins, who presided at this meeting, announced that the members who had been appointed as a Committee on Waste Utilization and Stream Improvement had not accepted the appointments, and a new committee was appointed to give necessary study to this subject. Another important matter brought before the meeting was the system of inspection approved at the May meeting, which involves the collecting and testing of corrugated and solid fibre boxes secured from shippers' stocks. This is a subject of vital interest, for if the boxes fail to meet specifications, the box manufacturer will look to the paperboard manufacturer for an explanation as to why the boxboard is unsatisfactory from the standpoint of test and caliper. It is felt this inspection service will maintain quality.

Container Group—General Manager Browder presided and brought before the Group a number of matters of particular interest. Several of the subjects considered at the general meeting were also brought up for discussion. J. H. MacLeod, chairman of the Sales Promotion Committee reported that the committee's investigation of canned food boxes is now under way. As a part of this investigation, a questionnaire has been sent to all members of the group and the information drawn from these replies will be of considerable value. A further report on this will be given at the next meeting.

The next meeting of the Association will be held at the Palmer House, Chicago, September 19, 20, 1928.

American Standards Ass'n Succeeds A. E. S. C.

Reconstruction of the American Engineering Standards Committee to keep pace with the growth of the industrial standardization movement in the United States is now under way, according to an announcement by the committee. The principal features of the reconstruction are the definite federation of national organizations, under the name American Standards Association, in such a way that trade associations interested in standardization may more readily join in the direction of the movement; placing the technical work of approving standards in a Standards Council; and concentrating administrative and financial responsibility in a Board of Directors composed of twelve industrial executives.

The reorganization has been unanimously approved by the main committee of the A. E. S. C., and is now being voted upon by the member-bodies. The action of the committee results from more than a year's intensive consideration of the subject by the Main Committee and Rules Committee. The latter was enlarged for the purpose to include a representative of each of the 19 member-bodies desiring representation.

Outlook for Stream Improvement Grows Bright

The present outlook for improved conditions throughout the country as regards waste utilization and stream improvement is considered more encouraging than ever previously observed.

At the recent conference of paper mill representatives in the State of Connecticut, it was recommended by C. M. Baker, engineer of the American Paper and Pulp Association, that the manufacturers' association of the State appoint a committee to co-operate with State officials and the American Paper and Pulp Association in devising means for overcoming waste and consequent stream pollution. Such a committee of the paper industry was accordingly formed with H. E. Hasty, of the Robert Gair Company, chairman, who has associated with him H. D. Brown, Inland Paperboard Company; A. D. Coffin, C. H. Dexter & Sons; C. C. Case, Case Board Company, and John P. Kennedy, American Writing Paper

Company. Since the formation of this committee of the paper industry, other industries have been organized in the same way, particularly the hat industry, rubber, laundry, steel, bakeries and the silk industry of Connecticut.

From the statement issued by the American Paper and Pulp Association, it is gratifying to note that at all meetings of these industries State officials have observed a considerate, rational attitude toward industries, while industry has at the same time shown an admirable spirit of co-operation. Harmony prevails and it is believed that definite and practical results will follow.

This awakening interest of industry as a whole in the study of the stream pollution problem is an auspicious sign of the times; for, as all industries having liquid wastes to dispose of are more or less responsible for stream pollution, improvements by any single industry must benefit all either directly or indirectly. It goes without saying, that as improvements are made by one industry or another complaints will become less frequent and the attitude of the public more lenient in consequence, while other benefits are sure to be felt. Thus, the activities of individual industries should tend to consolidate industry as a whole, not only in a study of the major problem, but also in its presentation in matters of legislation and policy before State or Federal officers and others interested.

American Waxed Paper Association Meets

The American Waxed Paper Association met at Hamilton, Ontario, on Friday and Saturday, July 13 and 14. This was the annual summer meeting. The Appleford Paper Products Ltd. of Hamilton, Ontario, W. S. Powell, manager, acted as host to the American manufacturers and a most enjoyable program was arranged.

The business sittings took place on Friday, and further developments in line with the program submitted recently before the Federal Trade Commission were accomplished. At this meeting, the association welcomed as new members the Otsego Waxed Paper Company, Karl R. Zimmer, manager, and the Union Waxed Tissue Paper Company, E. W. Kelley, president. A tentative form of standard contract for use by all American waxed paper manufacturers was developed which will be submitted later to the representatives for final approval. The standard contract is designed to eliminate ambiguity in contracts as well as to provide for the protection of both manufacturer and buyer, in that specifications are given in detail and in a more satisfactory manner than heretofore, and in a manner which is binding on both parties.

Uniform cost reports, as submitted by the members, were discussed and the general methods were in line with the purposes of the association. It was decided that a meeting of the cost accountants and others from the various companies should meet in Kalamazoo, Mich., during August to provide for more accurate cost reports and to be instructive to the attending cost men in the development of these cost reports in a manner which would be comparable because of this uniformity or similarity in accounts.

The question of standardization and simplification for the waxed paper products was discussed in detail. Because of the division in waxed paper products, as to their distribution, it was decided that this program should be divided into two separate divisions, and that the program for bread wrappers, which is now practically ready for a final meeting, should be completed first, and that following this the same process should be taken to provide standardization for lunch rolls, flat tissues, etc., in the event that section of the industry became sufficiently interested to co-operate with the association in such a procedure. As a result the standardization of bread wrappers will be presented to the Department of Commerce, Bureau of Standardization, early next fall.

A general discussion of statistical reports, credit reports, and other similar reports was most enlightening to the members and Paul S. Hanway, manager, presented a complete analysis, which showed in detail just how the various members had been co-operating in reports, replies to questionnaires, etc., during the past six months. The developments at the meeting proved that the returns in value from the association come mostly to those who made use of the advantages from co-operation with its manager in the development of useful information.

The Bureau for Trade Marks, Trade Names, Copyright, etc., as a new section of the association's program was discussed and approved.

The matter of ink coverage, which is one of the real problems of the waxed paper industry, was presented very clearly and concisely by R. A. Hayward, of the Kalamazoo Vegetable Parchment Company, together with a plan for estimating ink coverage and charges therefore, in a manner equitable to buyer and seller.

The meeting adjourned following a rising vote of appreciation to W. B. Powell, host for the gathering. The names of those in attendance follows:

American Bread Wrapper Co., J. T. O'Rourke and Emile Frische; Appleford Paper Products, Ltd., W. B. Powell.

Central Waxed Paper Co., R. B. Donnelley; Coated Paper Products Co., A. F. Gluck.

Davis. Jones & Beebe, Franklin D. Jones; Deframe Paper Co., H. H. Turner.

Hamersley Manufacturing Co., J. D. Goldberg; Paul S. Hanway, Manager of Association.

Kalamazoo Vegetable Parchment Company, R. A. Hayward.

Menasha Printing & Carton Co., G. H. Gardner and E. A. Meyer; Mumford Paper Mills, W. H. Howe.

Nashua Gummed & Coated Paper Co., E. A. Clark and Mr. Marshall; Newark Paraffine & Parchment Paper Co., W. J. Eisner.

Ohio Waxed Paper Co., Mr. Palmer; Otsego Waxed Paper Co., Karl Zimmer.

Union Waxed Tissue Paper Co., E. W. Kelley.

Warren Manufacturing Co., B. H. Ballard and Mr. Donohue; Waterproof Paper & Board Co., C. R. Wright.

Assistant Forester Clapp Honored

In recognition of his effective services for forestry research which culminated in the approval by President Coolidge of the so-called McSweeney bill, Assistant Forester, Earle H. Clapp, was the guest of honor at a luncheon recently held at the Cosmos Club, Washington, D. C. At the luncheon, Secretary of Agriculture Jardine presented Mr. Clapp at the instance of President Coolidge with the pen which the President used in affixing his signature to the legislation.

Many important articles and books have been written by Mr. Clapp. One of the outstanding is "A National Program of Forest Research," published two years ago. This work sets forth in masterly manner the necessity for a comprehensive program for fundamental research to make possible for this country to get the best use of its vast forest resources.

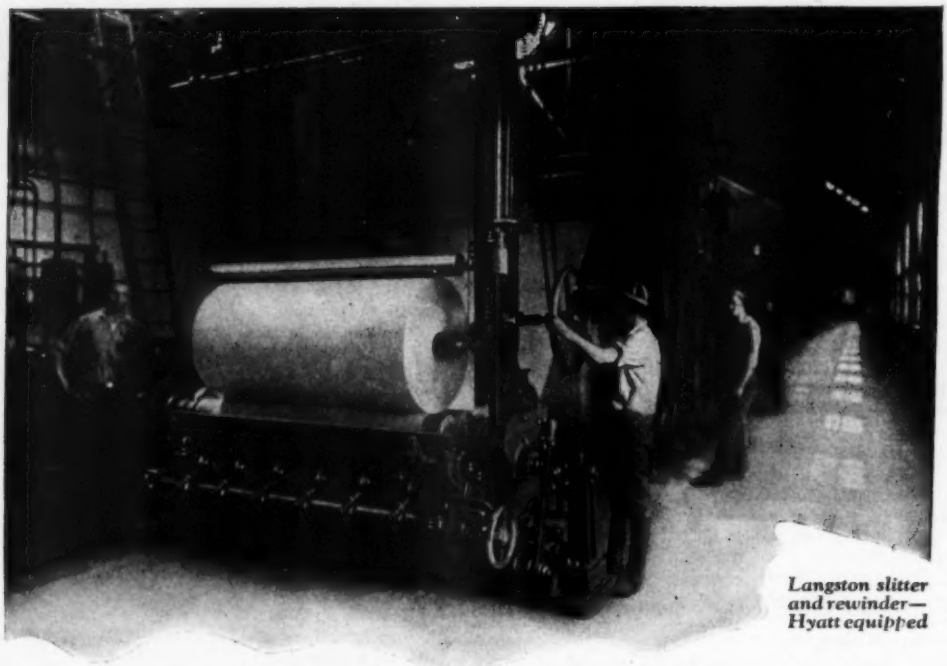
Tries Air Mail for Inter-Office Correspondence

For over a month Stephens-Adamson Mfg. Co. of Aurora, Ill., manufacturers of transmitting and conveying machinery, have been using air mail exclusively for every ounce of mail between the main office and the Pacific Coast factory at Los Angeles, Calif.

C. H. Adamson, secretary of the firm, reports that he can now mail a letter Monday afternoon and depends on having his reply with required blue prints, data, etc., on his desk Friday morning. By regular first class mail he considered himself fortunate to receive his answer by the succeeding Tuesday or Wednesday.

The experiment was started before the recent reduction in air mail rates to 5c for the first ounce and 10c for each additional ounce, and even at the old high rates the saving in time was well worth the added cost.

Mr. Adamson says that in several cases his firm has been able to produce and ship an elevator or conveyor three or four days ahead of schedule and trace the saving in time directly to air mail.



Langston slitter and rewinder—Hyatt equipped

Even tension . . . uniform wind with Hyatt Roller Bearings

ACCURATELY running rolls maintain an even tension and produce uniformly wound paper. To give their slitters and rewinders these important operating advantages, the Samuel M. Langston Company of Camden, N. J., manufacturers of the illustrated equipment, install Hyatt Roller Bearings at important points.

In addition to proper winding, Hyatt Roller Bearings, through their durability and extra capacity, impart long life to the machine, and withstand with ease the constant operation required in paper making. Very little lubrication is required, and the housings are oil tight.

In many paper mill machines, Hyatt Roller Bearings are becoming standard because of their engineering correctness and sturdy dependability. Ask the Hyatt Engineering Department to submit detail drawings on the application in which you are interested.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

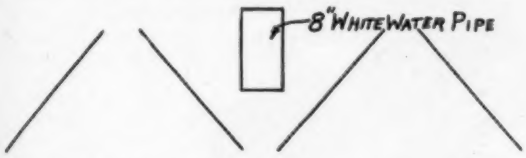
ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

Practical Helps for the Mill Man

A Baffle Arrangement

TO QUIET the flow of white water as it entered the vat of a save-all and to improve the formation of the fibrous mat on the cylinder mold was the problem of one mill superintendent. An 8-inch pipe with a velocity head of about eight feet discharged the white water into the top of the cylinder vat. A baffle arrangement was devised and built

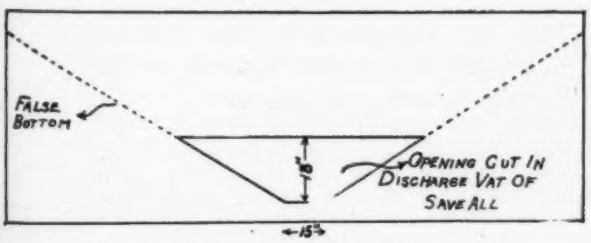


BAFFLE ARRANGEMENT SHOWING DISCHARGE OPENINGS

into the inlet section. Cypress planking was used in the construction of the baffle. The total length of the baffle was about 6 feet and was built in the form of a series of triangles placed end to end. The width of the openings in the baffles, as illustrated, must be gauged by the quantity of water supplied to the unit. As much water as possible passes through the opening in the baffle arrangement directly below the white water discharge into the vat. The excess water rises over the top of the baffle sections and a portion passes through each of the openings at the top, one opening in each of the various elevations. The remainder of the water flows down the outside slopes of the two end elevations and thus breaks up the direct flow of the white water into the vat. This very simple baffling arrangement has met with entire satisfaction and has resulted in accomplishing what was desired by the superintendent; namely, a quieter flow of white water into the vat and a better formed mat on the cylinder mold.

A Redesigned Save-all

IN A HIGH grade paper mill equipped with a save-all that discharged the recovered stock through a centrifugal pump to any desired point in the mill, it was found desirable to redesign the discharge vat of the machine to make possible the discharge of the recovered material directly to a drainer box and at as high a density as possible. Other changes in the machine were made to conform to the changes in the

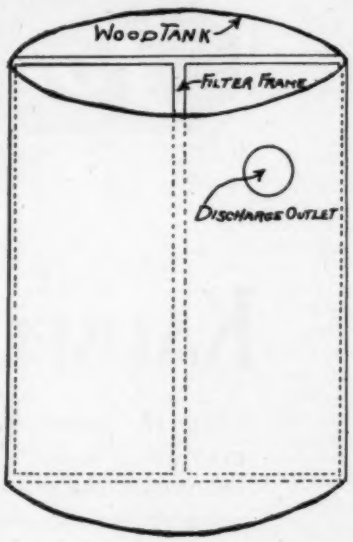


Back Side of Save All Vat

design of the vat and to aid in accomplishing the desired results. The usual method of pumping would cause trouble in maintaining weights and also in making changes in colors and grades of paper. The top of the discharge vat of the save-all was left intact to maintain strength and rigidity of the vat. An opening was cut in the back side of the vat along toward the bottom. The shape of the opening was made to conform to the false bottom of the discharge chamber. The false bottom slopes from the top ends of vat toward the bottom center of the discharge chamber. A couch was placed upon the cylinder mold to increase the density of the stock and a doctor was used to discharge the stock from the couch. The shower pipe located within the cylinder mold was adjusted to discharge just below the lip of the doctor of machine as originally designed. This pipe functions intermittently with the rotation of the mold and aids in keeping the wire of the mold clean. With these few simple changes in the design of a standard machine to meet conditions of this high grade mill it has been found to function most satisfactorily. The stock now collected in the drainer box located near the discharge opening in the vat of the save-all so that the stock recovered from the white water discharges into the drainer by gravity is used back in the process until the last beater on any given run is dropped. The balance of the stock is then saved until it can be used in the production of any particular grade of stock.

An Improvised Water Filter

IN A MILL manufacturing high grade papers, it became necessary to provide a means of filtering the water which was used in washing the rag half staff. A small vertical wood chest about four feet high and three feet in diameter was located close to each washer. Down through the center of each chest was placed a wire screen made from old paper machine wire supported on a wooden framework. Wood guides on the inside of each tank held its respective wire screen in position. The water supply line was piped to each of the various chests so that the water entered each chest near the top and on one side of the filter screen. The water flowing through the wire cloth discharged through an opening in the opposite side of the chest from the in-flowing water. Debris such as leaves small twigs, heavy sediment, etc., is thus retained on one side of the wire permitting the clean water to be used for washing. Such undesirable material as was retained by the wire cloth could then be removed from the chest from time to time as was deemed necessary. Likewise the screen could be easily raised from the chest as desired.



Pusey & Jones Construction Program Under Way

In a previous issue announcement was made that the Pusey and Jones Corporation Wilmington, Del., had decided on plans for modernizing the layout, buildings and equipment of its paper machine departments.

A recent visit to this veteran plant showed that the work of demolishing several obsolete buildings is now complete and that the structural steel on the new 50 x 100 ft. forge shop is ready for the bricklayers. The new 110 x 220 joiner shop, which will be a two-story building, is also taking form. All new buildings are of exceptionally heavy construction and will be equipped with the latest development in material-handling equipment and tools.

These improvements, together with the acquisition of a large tract of land directly across the Christiana River will give the Pusey and Jones Corporation unusually fine facilities for quality production on a more economical basis.

for PAPER

KALBFLEISCH gives coverage for Chemical Needs

Modern paper manufacture is conducted along lines which eliminate waste of time and effort. Sources of chemical supply must be equally competent.

Kalbfleisch qualifies in every particular.... including the very important feature of strategic plant locations. The six Kalbfleisch plants are close to raw material sources . . . close to every paper making center . . . close to you . . . as reference to the map reveals.

This well planned grouping of plants gives extra vitality and meaning to the Kalbfleisch conception of service.

Kalbfleisch Chemicals Include— ALUM (*both Commercial and Iron Free*) CASEIN (*Domestic and Imported*) ROSIN SIZE SALT CAKE CHINA CLAY GLAUBER'S SALT SODA ASH SULPHATE OF SODA MURIATIC ACID SATIN WHITE SULPHURIC ACID AMMONIA NITRIC ACID

Plants:
ERIE, PA.
KALAMAZOO, MICH.
CHATTANOOGA, TENN.

The
KALBFLEISCH
Corporation
200 Fifth Avenue, New York, N. Y.

Plants:
ELIZABETH, N. J.
DE QUINCY, LA.
WATERBURY, CONN.

The Month at Washington

A STUDY of the relation of the traffic department to the conduct of modern business was recently begun by the Transportation Division of the Department of Commerce in an effort to determine the place of industrial traffic management as a factor in the elimination of waste in the distribution of merchandise of all types, including paper. Facts and figures will also be collected on the relative movement of goods by railway, waterway, airway and highways. Inadequate attention to traffic matters, the size of an industry which makes the establishment of a separate traffic department necessary, avoidable wastes through more scientific traffic management, cost of maintaining a traffic department and its relation to other branches of business, will be studied. The data thus collected is expected to be of great practical benefit not only to manufacturers but also to wholesalers.

Survey of Industrial Machinery—The Domestic Commerce Division has begun a survey of industrial equipment in the United States to determine the amount of obsolete equipment and its importance as a factor which makes certain firms incapable of competing on an equally profitable basis with those having more modern equipment. Replacement of machinery which in point of service may have many years of usefulness, but which in point of satisfying the latest fancies of the ultimate consumer market is obsolete, is an important matter for the manufacturer. Obsolescence merits a definite understanding, especially that it may not be confused with depreciation. Obsolescence is effected largely by style changes or by the new products of inventive genius, and not by wear and tear. This study will provide for a proper accounting system for calculating obsolescence losses and for providing a fund to take care of it. If obsolescence is defined as representing the dead line beyond which a machine can compete profitably with another machine, none of the machine's value is destroyed until the dead line is reached, while depreciation approaches its dead line by gradual and constantly diminishing value. A sample survey will first be made to develop the plan of procedure and to learn what obstacles must be overcome. At present, no facts or information are available on the subject. A census will be made of machines in use, including such questions as the type, model and size of machine in use, floor space occupied, productivity, age, power consumption, repairs and rejects of its product.

Industrial Survey of New England—Industrial surveys will be conducted in New England in the near future to assist in the development of manufacturing and the rehabilitation of factories, while at the same time investigations will be carried on in the interests of commercal aviation, according to recent conferences held in the Department of Commerce. The Bureau of Foreign and Domestic Commerce has already done much to increase the business of various industries and to boost trade abroad for clothing factories and cotton mills, and now the other industries are to come up for consideration in the same way.

System of Training Foremen—Foreman training in the United States is setting an example for European nations and the "try-out-spirit" is getting into swing, knocking down old traditions of several-hundred-years' growth. Everywhere plants are copying American ideas.

Recent Income Tax Rulings—Can club dues, paid by a company to maintain the membership of its president in a certain organization, be allowed as a deduction for income tax purposes, is a question recently decided by the U. S. Board of Tax Appeals in L. S. Cohn Co. (No. 13501). It was found that the president used his membership in various clubs to promote the sale of the company's goods, and not for any other purpose, having joined at the instance of other stockholders. Other officers of the company were also members of clubs but they paid their own dues. Upon the evidence the board held the deduction proper.

The cost of alterations of a company's building, made pursuant to orders of city authorities, which bettered the working conditions of the company's employees, was held by the board in another decision to be a capital expenditure and not deductible as an ordinary and necessary business expense (B. T. Wright, Inc., No. 12164).

Where a corporation spent large sums in advertising over a long series of years and charged same to expense, it cannot afterwards seek to restore said expenditures to capital and allocate portions thereof to building up future business, and no part of such expenditure so charged off as expense, can be allowed as invested capital, says the Board in another decision (Kress & Owen Co., No. 12565).

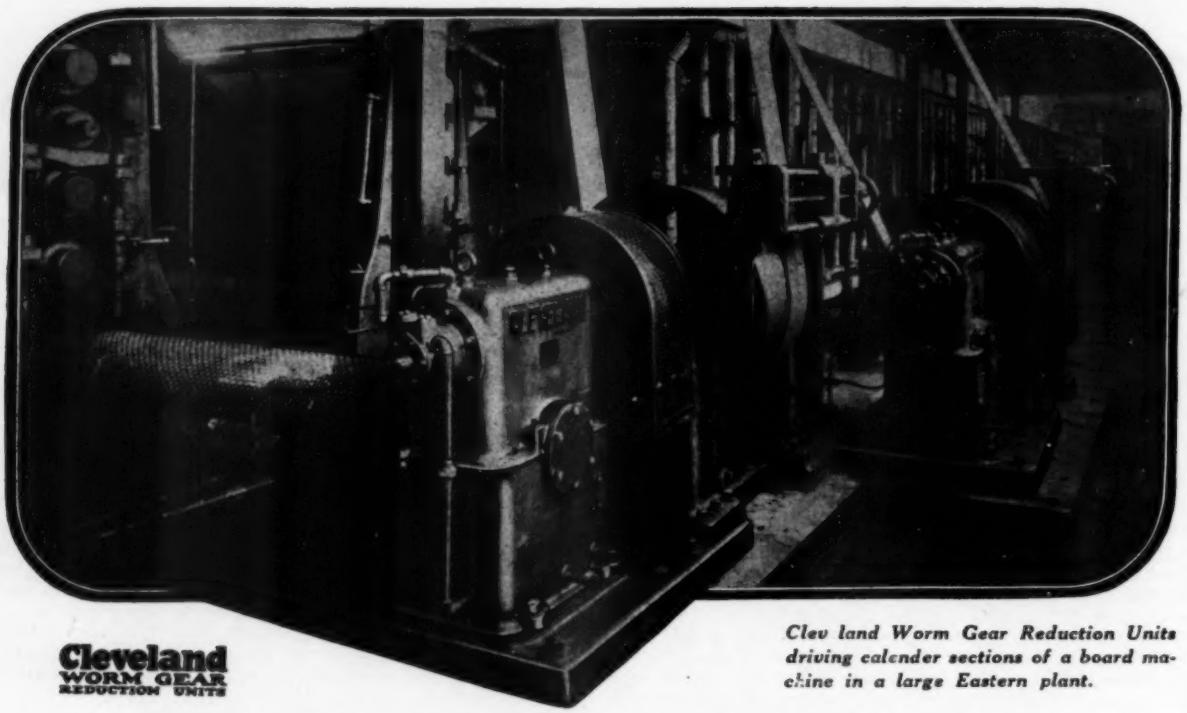
The Bureau of Internal Revenue has just issued a ruling, revoking I. T. 2356, which held that no loss is recognized from the trading in of trucks or passenger cars to be used for business purposes, on new trucks and passenger cars to be used for like purposes. Accordingly, the future rulings will be that in a trade in the transaction should be treated as a sale of the old truck or car, making necessary a determination of the gain or loss resulting from such sale.

Recent Government Publications—"The International Cartel Movement," issued as Trade Information Bulletin No. 556, by the Bureau of Foreign and Domestic Commerce, is now available for distribution. This shows the "merger" movement in Europe which is being so closely paralleled in the United States in the last year or two. In Europe, consolidations have been going on since the post-war period began.

"How To Use Current Business Statistics" is the title of a pamphlet just issued by the Bureau of the Census, showing that the practical application of current statistical information by American business men has been one of the outstanding factors in our generally sustained prosperity during the last five years. Nearly 300 specific instances of the use of statistics in business have been collected, with suggestions as to how these figures may be used to the best advantage. The rise of statistics from small beginnings to a position of commanding importance has been definite response to the growing needs of business. The ordinary business executive cannot have either in his mind or in the possession of his own concern, all the facts necessary to intelligent business judgment. Many business men have been benefited through the use of current statistics, information they could not hope to obtain without collective action. The business executive must sign up his own branch of industry with industry as a whole and must know the buying conditions of his customers as well as the condition of his material markets. This data cannot be gathered within his own organization, but only by agencies representing or collecting figures for an entire industry. The result of this need of the business world has been the growth of statistical services by government departments, trade associations, periodicals and individual business concerns. Almost all important business organizations now make use of statistical information for the guidance of their respective activities, including textile, automobile, paper, etc.

"Changes in Foreign Tariffs and Trade Regulations" is the title of a pamphlet just issued by the Foreign Tariffs Division, showing regulations of importance to American exporters and importers including restrictions on numerous commodities, changes in the duty on exports and imports, and commercial treaty negotiations, marks and numbers to be shown on import documents, etc.

Recent Customs Decisions—Granting protests of the James P. Hefferman Paper Company, the U. S. Customs Court found



Cleveland
WORM GEAR
REDUCTION UNITS

Clev land Worm Gear Reduction Units driving calender sections of a board machine in a large Eastern plant.

Are You Saving the Cleveland Way?

The Cleveland Drive
Is Adapted for—
Section Drives
Calenders
Screens
Thickeners
Deckers
Knotters
Washers
Pulp Machines
Conveyors
Elevators
Fans

It is quite possible that your power transmission costs for maintenance, inspection, and lost production time, are many times the outlay for a dependable Cleveland worm gear drive. And, furthermore, there is usually effected a substantial saving in power consumption by means of this efficient, smooth-running reduction unit. Cleveland Worm Gear Reduction Units have replaced belts, gears, etc. in a great number of American and Canadian mills. In the plant where the above photograph was made the old section drives on several machines have been replaced by Clevelands, one after the other.

If you want a sturdy, long-lived, efficient and dependable drive for your equipment, it will pay you to consider Cleveland worm gearing.

Your machine manufacturer can give you information about the Cleveland drive. Let us send you bulletin 106 which describes the entire standardized line of Cleveland Worm Gear Reduction Units.

CLEVELAND
WORM & GEAR COMPANY

3270 EAST 80th STREET CLEVELAND, OHIO

that standard newsprint paper, as used in par. 1672 of the tariff act of 1922, was not limited to the particular grade or quality of newsprint which meets the requirements of modern high speed rotary or cylinder presses, such as are employed by large metropolitan daily newspapers, but likewise embraces newsprint like that involved in this case used by weekly and semi-weekly newspapers in printing their regular editions. The single factor recognized as standard in all newsprint, the court rules, is its weight, to wit, 32 pounds to the ream of 500 sheets 24x36 inches. The paper in question was taxed at two rates, some as wrapping paper at 30 per cent under par. 1309, the remainder as printing paper at ¼ of 1c per pound and 10 per cent ad valorem under par. 1301. The court granted free entry under par. 1672 (No. 140231-G-55940-25) (T. D. 42867).

Endless belts for use on papermaking machines were the subject of a tariff dispute in P. J. Schweitzer, Inc. (No. 3046), in which the U. S. Court of Customs Appeals handed down a decision (T. D. 42872), holding that finished articles in the form of "endless belts," composed of wool and for use on a fourdrinier papermaking machine in the manufacture of "tissue grade" paper, are an integral part of the machine and dutiable as "parts" under par. 372 of the tariff act of 1922 rather than as "woven fabrics" under par. 1109 or as "manufactures" under par. 1119, and the fact that it was known in the trade as "papermakers' felt" or that it was not manufactured or furnished by fourdrinier machine manufacturers, was held to make no difference.

Tariff Investigation—The Tariff Commission has ordered an investigation of the cost of production of barium chloride, for which Germany is the principal source of supply, dutiable at 1¼ cents under par. 12 of the 1922 Tariff Act, and which has many uses, chiefly in the manufacture of lithographic inks, paper and tanning, etc. The investigation results from the claim of local manufacturers for a raise in duty to meet foreign competition.

Recent Interstate Commerce Rulings—Rates applicable on corrugated paper boxes, in carloads, from Tennessee to Arkansas were found unreasonable in a recent decision by the Interstate Commerce Commission (Andrews Co., No. 19457), and reasonable rates were prescribed for the future and reparation awarded.

Rates on waste paper, in carloads, from Washington, D. C., to Rockingham, N. C., were found unreasonable but not unjustly discriminatory, in Rockingham Paper Co., No. 19611, and reparation was awarded.

In Stevens Paper Mills. vs. Penna. R. R., rates on macerated currency, in carloads, from Washington, D. C., to certain destinations in official classification territory, were found not unreasonable or otherwise unlawful, and the complaint was dismissed (No. 18380).

F. O. B. Meaning—The different interpretation given to the term "f. o. b." in the United States and other European countries, may give rise to considerable trouble in the export business, says a commercial attaché abroad, unless clearly explained as f. o. b. vessel, f. o. b. export steamer, or f. o. b. a specified steamer. In order to avoid complications, it is suggested that when quoting prices this distinction be made so as not to confuse the buyer or engender loss of business abroad through misunderstandings.

Metric System—Use of weights and measures other than metric are to be prohibited in Mexican trade under a law recently signed by the President. Under this new law, all articles sold must show weight, measure or volume in the metric system and prohibits the sale of "package" goods as such. Sales must also be in units or multiples of one, two or five of some metric unit. Use of fractions will not be permitted.

Trade-Mark Squabble—The Commissioner of Patents in Kimberly-Clark Co. vs. American Rotogravure Company (No. 1013), reversed the finding of the examiner for cancellation of the word "rotogravur" for printing presses. It was found that the petitioner had not used the word "rotogravur" as a trademark at all, and had not used it in a descriptive sense except in connection with sale of paper to which it applied its own trade-mark, "Rotoplate." The commissioner also stated that a manufacturer of paper is not restricted in its right to the use of a certain term in describing that paper, by the fact that that term had been registered as applied to printing presses.

Standards for Asbestos Paper—The Division of Simplified Practice is circularizing the industry for signed acceptances of Simplified Practice Recommendation No. 19, Asbestos Paper and Asbestos Millboard, which was recently revised. The average degree of adherence for the past year, based on a factual survey, was 76 per cent.

Price of Chemical Pulp—Since the settlement of Sweden's labor troubles in the chemical pulp industry, the market has not recovered to the extent anticipated, but still the price of chemical pulp is being maintained by Sweden. British buyers are holding off, but American buyers are buying heavily.

Making Paper from Straw—The financing of a project to manufacture paper from straw is being considered in Argentine, according to a commercial attaché report from Rosario.

Austrian Paper Industry—Paper and pulp production in Austria reached record figures last year; 55,900 tons of board, 194,970 tons of chemical pulp, and 93,590 tons of mechanical pulp. Chemical pulp is now gaining in exports over other varieties of pulp. Approximately 60 per cent of the paper production enters the export trade.

Coupons in Packages—A Cuban decree, just issued, makes unlawful the sale of package goods containing any kind of coupons good for other merchandise, or of pictures or articles not directly pertaining to the contents of the package. The decree apparently applies to advertising slips also, and anything of this kind must be outside the package.

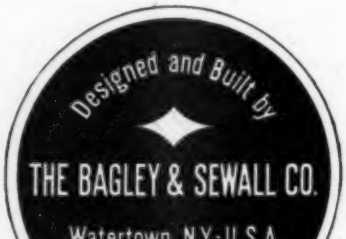
Forest Protection—Thirty-eight states now co-operate with the Federal government in protecting forests against fire, says the U. S. Forest Service.

The U. S. is now the greatest wood user in the world, says W. N. Sparhawk, Forest Economist, U. S. Forest Service, using two-fifths of the world's consumption of timber of all kinds. The manufacture of paper and other products from woodpulp, which consumed practically no wood 40 years ago, now takes the equivalent of more than two billion board feet from our own forests, besides an equal or greater amount in the form of imported wood, pulp and paper. It is urged, therefore, that full timber crops be grown wherever cut-over land is available for this purpose to conserve the future supply. "Why Grow Timber?" is a circular just published on the subject, in which Mr. Sparhawk discusses the reason for confidence that timber will always be in great demand in this country.

Lift Trucks and Skid Platforms—Proposed simplified practice recommendations for the dimensions of lift trucks and skid platforms were approved at a recent conference in Washington, two standard dimensions, 8 inch and 12 inch, being adopted for under clearance of skid platforms, and the minimum clearance between runners or supports of skids is to be not less than 29 inches. In addition, the conference favored standard dimensions for over-all length and width of skid platforms, with the proviso that there be two standards, one to be such that this size of skid can be placed three abreast in a freight car, and the other the same length as the first skid but twice the width. Standard terminology for skid platforms was also agreed upon; i. e., skid platforms, skid stock boxes, hand lift trucks, power lift trucks, etc.

Recent Postal Regulations—The so-called special-handling service may be purchased without special-delivery service for mail under provisions of the Postal Rate Act of 1928, says the Post Office Department in a recent memo. The new law merges the special-handling service and the special-delivery service into one service, and calls the combined service the "special delivery service." For this combined service, new rates go into effect in certain instances, a copy of which regulations may be procured from your local postmaster or direct from Washington.

Put a complete and legible address, including street number or other definite local adress, **with return card**, on all your mail, says The Third Assistant Postmaster General, including your catalogues and advertising literature for the average



Which Means —

The Finest in Paper Making Machinery

and

Our Continued Interest Cooperation and Effort to Make Bagley and Sewall Products the Most Satisfactory and Efficient Wherever Installed.

MANY OF OUR MODERN PAPER MACHINE DEVICES WILL MATERIALLY ASSIST TO INCREASE THE SPEED AND PRODUCTION ON OLDER EXISTING TYPES OF MACHINES

per capita expenditure last year amounted to $5.09 and is rapidly increasing, and for lack of proper address or return card much of this mail on which postage is paid goes to the dead letter office.

Mailers who have a permit to mail third-class matter at the pound rate, may continue to use envelopes and wrappers now on hand, but those obtained after the present supply is exhausted must bear the indicia prescribed in regulations recently issued by the Post Office Department, (Section 435½, P. L. & R.)

A penalty charge of 1c is now required for each ounce or fraction thereof computed on the unpaid weight of all first-class mail matter shortpaid more than 2 cents. For example, if a letter weighs four ounces and has only 2c postage prepaid, the deficient postage to be collected is six cents and the additional charge of 1c for each of these unpaid ounces is 3c, making a grand total of 9c postage due. To keep your customers happy use a postal scales and use them with care, under the new law.

The Post Office Department has also issued new instructions and postal regulations governing mailings in bulk, at pound rates, revised rates applying either to twenty pound or 200 pieces of third class matter. Circulars, miscellaneous printed matter, merchandise, and all third class matter must consist of identical pieces presented in quantities of not less than either 20 pounds or 200 pieces under this ruling. The rate is 12c per pound for each pound or fraction, except in the case of books or catalogues having 24 pages or more on which the rate is 8c for each pound or fraction, but in no case is the postage less than 1c a piece. To obtain the rate, each mailing must consist of identical pieces. Precancelled stamps may be used. (Section 435½, P. L. & R.) Permit mailings may also be had, "U. S. Postage Paid, Permit 100," being used.

Air Postal Service will soon be inaugurated. The first railway post office was introduced in this country just 66 years ago, the mail being distributed enroute resulting in a vast saving of time. Under the airway system clerks will fly in the planes and work the mail while enroute instead of waiting until it reaches the various post offices.

The delivery and handling of parcel post packages under the new law gives the shipper a new and better service, called "special delivery," giving, second, third and fourth class mail all the same expeditious treatment as first class mail where desired by marking packages "special delivery." Postage in addition to the regular postage of 15c for 2 pounds, 25c between 2 and 10 pounds, and 35c on matter over 10 pounds, will have to be paid for this service, while those desiring special handling without special delivery pay 10c for 2 pounds, 15c for 2 to 10 pounds and 20 cents for over 10 pounds. By affixing special delivery stamps and paying those rates, such mail matter is now held for shipment with ordinary bulk mail but is despatched and transported on the same trains as first class mail and is given immediate delivery at destination; by affixing special handling stamps it is also distributed, despatched, transported and delivered the same as first class mail, but not given immediate delivery at the office of destination except as first class mail. For example, an ordinary parcel from Washington or New York to points in Florida is despatched each day in a storage car, whereas if it bears the special-delivery or handling rate it goes out on the first train carrying mail of the first class and will be immediately delivered.

Employment Situation—Both employment and pay-roll totals were slightly greater in June than in May, according to figures compiled by the Bureau of Labor Statistics, and with 1923 as the basis of 100 the following changes are shown for

	Employment			Pay-Roll Totals		
	1927	1928		1927	1928	
	June	May	June	June	May	June
Paper and printing	102.4	101.7	101.5	111.0	112.2	112.4
Paper and pulp....	92.0	89.4	89.9	97.0	96.3	96.0
Paper boxes	94.5	91.4	91.8	102.8	104.2	107.7

The Pacific Paper Products Co., Tacoma, Wash., has filed an amendment increasing its capital stock from $50,000 to $250,000.

NORTHERN NEW YORK NEWS

Dealers Invited to Visit Bag Factory

The Taggert Oswego Paper and Bag Corporation of Oswego has issued an invitation to 28,000 dealers in building supplies and materials to visit its plant, the largest manufactory of multi-wall paper bags in the country. Tom Wright, secretary of the New York State Builders Supply Association and connected with the Floyd L. Carlisle interests of New York, has completed plans for showing the dealers the processes of manufacturing the bags.

The plant is running behind in its orders because of the volume of business, but new machinery is being installed and other speed up systems being installed will have the plant turning out all its orders on schedule time soon, officials have announced.

West Virginia P. & P. to Have Switching Track

A hearing has been conducted before the public service commission on the joint application of West Virginia Pulp and Paper Company and Boston and Maine railroad for permission to construct a new switch and sidetrack in North Main street, Mechanicville, connecting the plant of the paper company with the tracks of the railroad company. The city of Mechanicville has already granted its consent.

The testimony given at the hearing indicated that the paper mill plant was to be enlarged in capacity and the additional sidetrack was necessary in order to avoid confusion and congestion in the shipping of the finished product of the company. The paper company now handles about 33,000 tons of freight a month. The decision of the commission will be announced later.

Pulp Mill at Gouldtown Burned

The Gould Paper Company's pulp mill at Gouldtown, which supplies pulp for the company's paper mill at Lyons Falls, N. Y. was destroyed by fire early on the morning of July 24th.

Grinding machines and four wet machines located in the basement of the mill were not entirely destroyed. The loss, however, is estimated at about $100,000. The origin of the fire is unknown, but it is thought the blaze started under a band saw in the wood room. There was no fire fighting equipment, but a large quantity of wood and pulp stored in the yard of the mill was saved through the efforts of employees.

Harry P. Gould, president of the company, announced that plans to reconstruct the mill had already been started and the work would be started about the middle of August.

I. P. Co. to Sell Watertown Real Estate

It has been announced at the real estate office of R. J. Dundon in Watertown that negotiations have been completed and he has been appointed selling agent for the International Paper Company for the liquidation of its real estate located in Watertown and Glen Park, excepting the water powers.

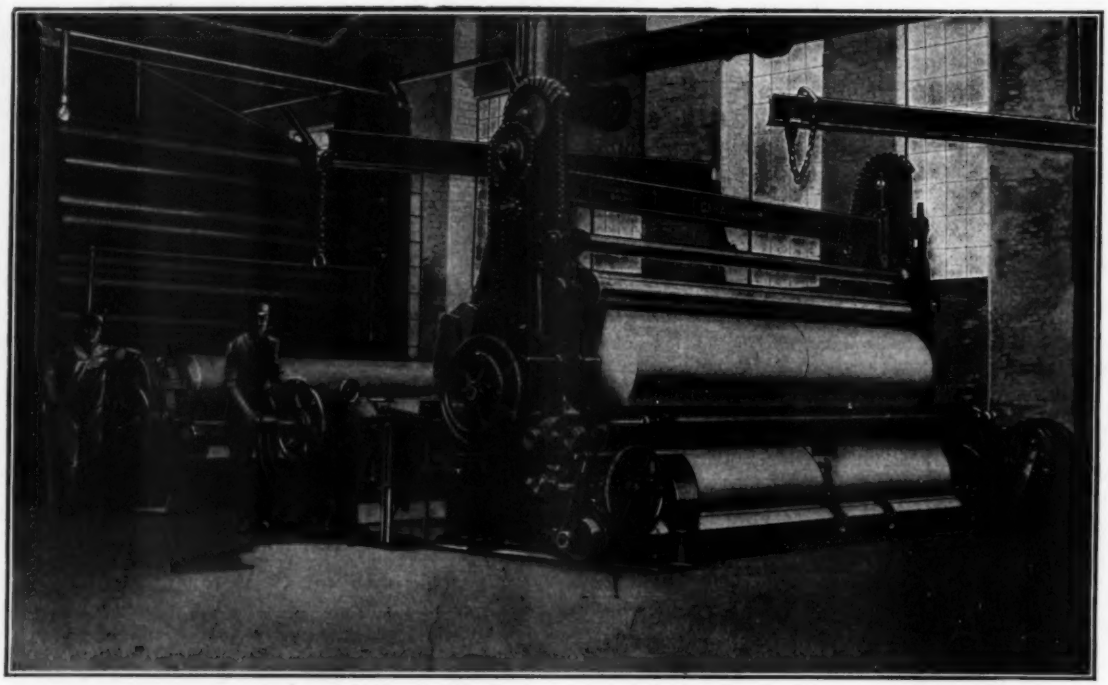
There are 25 houses located both in Watertown and Glen Park, all of which are being offered. There are also a great many parcels of vacant land. It is expected that the entire property will be disposed of before winter.

Joseph R. Johnson

Joseph R. Johnson, of Glens Falls, and employee of Finch Pruyn and Company for 45 years, died suddenly, July 4 while eating dinner at his cottage at Glen Lake, at the age of 73 years.

Mr. Johnson for many years was in charge of the saw mill at Feeder dam, later becoming a mechanic during the construction of the paper mill. He held that position until he retired in February, 1927, following an accident. He is survived by his widow, two daughters, three sons, two brothers and five sisters.

GOOD NEWS ROLLS



A news roll which will unwind at high speed clear down to the core is easy to sell.

Add to this the saving factors in both the mill and the press room, due to approximately 12% more weight per roll, 12% less cores and cargo space.

Camachines Make Such Rolls

CAMERON MACHINE COMPANY

61 Poplar Street Brooklyn, N. Y.

NEW YORK CITY NEWS

Acquires Burkhardt Paper Co.

An announcement issued in New York on July 25, states that the Burkhardt Paper Corporation has been incorporated in Delaware and has acquired all of the liabilities and assets of the Burkhardt Paper Company, of Niagara Falls, N. Y., including its paper mill in that city, which is the plant formerly occupied by the American Asbestos Covering Company, of which C. R. Burkhardt was president. The new corporation has a capitalization of $300,000 of 7 per cent cumulative Class A common stock of $10 par value, and 90,000 shares of Class B common stock of a par value of one mill per share.

Officers of the corporation are: C. R. Burkhardt, of Teaneck, N. J., president; Louis Leonardis, of Newark, N. J., vice president, and A. W. Schumacher, of Niagara Falls, N. Y., secretary and treasurer. Mr. Burkhardt has spent much of his time in New York and New Jersey lately, inspecting factory properties, and the corporation is now making arrangements to equip a paper mill of 50-ton daily capacity in Carlstadt, N. J., on the Erie Railroad, in order to be better able to care for large orders and contracts from New York City dealers and to abolish the freight differential between New York and Niagara Falls. It is proposed to discontinue the mill at Niagara Falls as soon as the Carlstadt mill is ready for operation. Machinery for one-half the capacity of the mill is expected to be soon removed from the mill of the Pleasantdale Paper Company at Hammonton, N. J., to the proposed new plant in Carlstadt.

The officers of the corporation are endeavoring to effect the arrangements and financing necessary to speed the completion and operation of the new proposed mill, and state that they intend to have the first unit of the new mill in operation by about the middle of September.

Join International Paper Co.

W. N. Hurlbut has been elected a vice president of the International Paper Company, with headquarters in New York City. Mr. Hurlbut, who recently joined the executive staff of the company, has been identified with the pulp and paper industry in Canada for many years. He was previously connected with the Mead and Spanish River organization, and the Canadian Newsprint Company.

Walter Baylies has been elected a member of the the Board of Directors of the International. Mr. Baylies is a prominent Boston business man, and has been foremost in New England power circles for some years.

The Metropolitan Bag and Paper Jobbers' Association, Inc., whose membership includes most of the prominent paper and paper bag jobbers in Greater New York, will hold its eleventh annual summer outing on August 9 at the Narrangansett Inn in Lindenhurst, Long Island. The members and their guests will gather at Borough Hall in Brooklyn at 9 a. m. of that day and Pullman busses will transport them to the scene of the day's outing. Athletic contests, a baseball game and other events are on the program, and luncheon and a shore dinner will be served.

The Container Corporation of America, manufacturer of paper board and containers with plants in Chicago and Philadelphia, issued a report on July 25 which shows a net profit for the six months ended June 30, 1928, of $814,345 after interest and depreciation but before Federal taxes, comparing with a net profit of $752,470 in the corresponding period last year. For the June quarter the company had a net profit of $386,436, against $427,909 in the preceding quarter and $460,072 in the second quarter of last year.

The International Paper Company, of New York, has announced that the following additional firms have been appointed distributors of its Adirondack Bond and Ledger paper: R. C. Kastner Paper Company, 8 Varick St., New York; John Carter & Co., Inc., 597 Atlantic ave., Boston, Mass., and 74 Union Place, Hartford, Conn., and the Carpenter Paper Co., 2149 Sacramento street, Los Angeles, Cal.

The Lowe Paper Co. is to have an aviation direction sign placed on the roof of its plant in Ridgefield, N. J., to be 200 feet long and to be made of white crushed stone, and not painted which is the usual procedure. The roof of the mill is black and pebbled, so that the white crushed stone spelling "Ridgefield," and the white arrow pointing the way to the Teterboro airport will be plainly visible from the air. Arrangements for the sign were made by R. B. C. Noorduyn, chairman of the Aviation and Airport Committee of the Bergen County Chamber of Commerce with Donald V. Lowe, vice president of the Lowe Paper Company.

Harry J. Northcott

Harry J. Northcott, manager of sales of the Pejepscot Paper Company, of 42 Broadway, New York, died at his home, 450 West 147th street, New York, on June 30 after an illness of some months. Mr. Northcott started in the paper trade with W. H. Parsons & Co. in 1880, and with the exception of two years, has been connected with the Pejepscot Paper Company and its predecessors, W. H. Parsons & Co., until his death. He had a very large acquaintance in the paper trade and in his death his company and the paper industry in general have lost a man whose ability was recognized and whose kindliness and personality made him respected and well liked. He is survived by a widow, four sisters and a brother.

The Reliable Paper and Twine Company, of Newark, N. J., was incorporated under New Jersey laws a few days ago to deal in paper. The new corporation has a capital of $10,000, and is represented by Samuel L. Diener, of Newark.

PACIFIC COAST NEWS

WASHINGTON

Ground was broken late in July for the plant of the Union Bag and Paper Company at Vancouver, Wash., and the pouring of the concrete will be started this month. The plant, which is being constructed for the Union Bag and Paper Co. of New York, by the Austin Construction Co., will cost approximately $200,000. It will be supplied with paper from the Columbia River Paper Mills of Vancouver.

Hammermill and Zellerbach to Build Plant

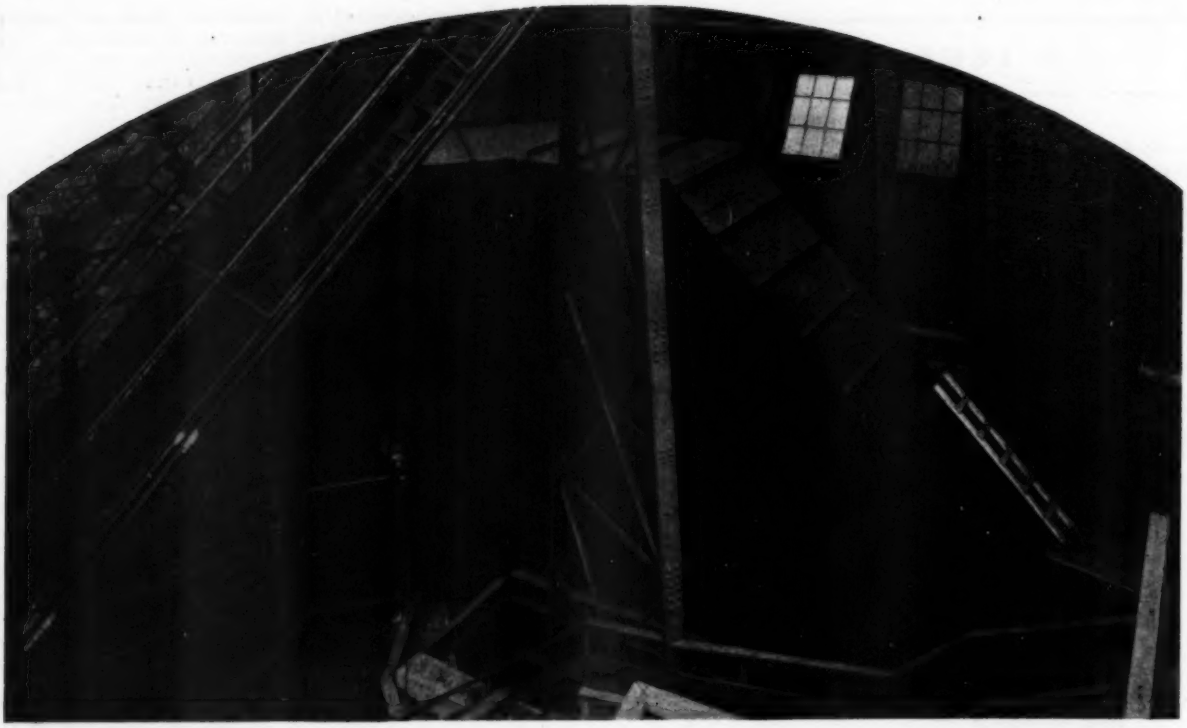
Hammermill Paper Co., Erie, Pa., has entered into a business enterprise with the Zellerbach interests of San Francisco, J. Y. Baruh of Los Angeles and John C. Higgins of New York City for the purpose of erecting a new paper mill.

This mill will be built adjacent to the pulp mill of the Gray's Harbor Pulp Co., now under construction at Hoquiam, Wash. which will place it favorably in the midst of the last extensive stands of timber suited for pulpwood uses.

The production and sales of the paper from the new mill will be under Hammermill management.

An appeal to the Interstate Commerce Commission to adjust rates on pulp from the Pacific Northwest to mid-continental points, will be made by the Hoquiam, Wash., chamber of commerce. At present, the Atlantic ports enjoy a $1 advantage in tariff, the chamber claims.

The Dougall Wood Fibre Co. has purchased the property of the Occident Pulp and Paper Mills at Edmonds, Wash. The company is incorporated for $250,000. A. H. Dougall, I. K. Dougall and J. H. Templeton are the incorporators.



Big Business uses NITROSE

NITROSE insures longer protection than any paint you can buy. Applies with no more preparation than wire brushing the scale. Needs no mixing, no priming coat. Can be spread over the wet, hot or oily surfaces without cracking, pealing or blistering. Only one coat is needed. Costs less by saving labor, going farther, lasting longer. Unaffected by climatic conditions—always ready for instant service. Resists the corrosive action of heat, rust, gas, grease, chemicals, acid fumes, brine solutions, ammonia and alkalis. The time-rust-acid-heat-resisting liquid armor that spreads like paint and holds like a weld.

Industrial leaders like Rochester Gas & Electric Company (New York) do not guess. Nor do they buy corrosive preventives on a price-per-gallon basis. Only cost-per-year in protection delivered is the sales language they understand.

Rochester Gas & Electric Company protects against corrosion, with NITROSE, the breechings for ten B. & W. 600 HP boilers that register 375 degrees F. on the outside. NITROSE stays a year on this company's fan housings, regardless of the always present gas fumes that eat unprotected metal. NITROSE keeps wet coal dust from eating away the flue outlets to their twelve Bigelow-Hornsby 875 HP boilers. The canvas coverings over the tops of their 22 boilers are kept pliable at all times with NITROSE.

Your corrosive problems may be entirely different than those of the Rochester Gas & Electric Company. But it makes no difference. If you have one, we have a conqueror for it—in NITROSE.

The NITROSE Company

1500E Peoria Life Bldg., Peoria, Ill.

Shipment in cans or drums from

Peoria Rochester Detroit Kansas City Seattle
San Francisco New York Cleveland Los Angeles

NITROSE

OREGON

Fir-Tex Stockholders Meet

Shareholders of the Fir-Tex Insulating Board Company will hold a meeting on the first of September in Portland, Ore., when directors of the company will be elected. Shortly afterward, construction of the mill at St. Helens, Oregon, will be started, and it is believed that it will take about three and a half months to complete the work. About five months will be required to build some of the units of machinery, so that operations will not be started until early in 1929.

Headquarters for the company have been established at 624 Pacific Building, St. Helens, with A. E. Millington, vice-president and general manager, in charge.

The company is incorporated under the laws of the State of Oregon and has 50,000 shares of capital stock divided as follows: 25,000 shares class "A" par value $100 per share and 25,000 shares class "B" no par value. The unsold portion of the class "A" common stock is being offered for sale.

Western Wax Paper Co. Lets Contract

The Western Wax Paper Co. of Portland, Ore., late in July let the contract for the construction of a duplicate structure, adjoining its present property in the North Portland district. The building will cover a space measuring 112x240 feet.

Work has actually started on the building which will be one-story, reinforced concrete walls, metal sash and mill type of construction. Frank J. Leonard, Portland contractor is building the plant.

A $1,000,000 contract for furnishing paper for the Portland Oregonian during 1929 has been awarded to the Hawley Mills at Oregon City, according to announcement of Willard R. Hawley, Jr. The Hawley mills also supply the Hearst papers on the Pacific Coast.

CALIFORNIA

Pacific Coast P. & P. Co. Announce Plans

Rice straw will be used in the manufacture of paper by the Pacific Coast Pulp and Paper Company, which, will start construction this month of a plant, the first of its kind, at Richvale, California. Announcement to this effect was made in Portland recently by C. A. Kiernan and P. Swan.

The mill will have a capacity of 20 tons of finished paper daily with buildings to double the capacity and will be located on a 25-acre tract of land provided by the Butte County Rice Growers Ass'n. Buildings will all be of concrete and steel construction; main machinery building, 225x66 feet; beater building, 120x66 feet; digester building, 75x30 feet; recovery plant, 240x60 feet and the boiler room 50x80 feet. A water tank will be constructed to hold 60,000 gallons of water and will be 100 feet high. In addition there will be erected straw storage warehouses. Offices will be established in a building erected for that purpose in the town site.

Incorporation papers were filed by the company last month with a capital stock of $1,500,000 with head offices in Los Angeles. Officers are: D. M. Thomson, Santa Monica, president; Wesley E. Martin, Los Angeles, secretary-treasurer; C. A. Kiernan, superintendent. Mr. Martin will make his headquarters at Richvale. Plans and specifications for the plant have been drawn up by Mr. Kiernan and P. Swan, engineer, of Portland.

It is expected that operations will begin in March of next year. About 100 persons will be employed by the concern and of these about 40 will be skilled paper pulp and paper men.

Over 800 acres of rich timber land was burned when fire starting in the Crown Willamette plant in the Tahoe basin in California, spread in the forest. The blaze destroyed 20 buildings, including a company kitchen and mess hall. In addition, 10,000 cords of cut wood were lost. The fire was put under control by 275 men who battled the flames.

MICHIGAN NEWS

Sutherland and Standard Paper Plants Merged

Merger of the Sutherland Paper Co. and the Standard Paper Co. into a corporation bearing the name of the former concern and with an authorized capital of $3,000,000 was effected July 9th. Sutherland stockholders met and unanimously voted to authorize the increase in capital from $1,750,000 to $3,000,000, also to exchange on an even basis a share of Sutherland stock for a share of Standard stock.

F. W. Sutherland, secretary of the Sutherland Paper Co., announces that the board of directors of the Sutherland Company will be increased from nine to thirteen. Jerome Keane, Detroit, of the banking house of Keane, Higbie, and Company, has been placed on the board, while the other three will be named from the Standard Paper Co.

The consolidation will of necessity mean the retirement of certain men well known in the Kalamazoo valley paper industry. L. W. Sutherland will be president of the new company, while F. W. Sutherland will continue as secretary. A general production manager will be placed over the Standard division. He is yet to be selected.

On the basis of present earnings of the two companies, the stock is considered easily worth $25 a share, the prevailing price. Through the consolidation many savings should be effected and earnings materially increased.

The merger finds the plants in fine condition. Sutherland has recently rebuilt its board machine, increasing its output from 50 to over 60 tons a day. Standard is now installing a new machine, which will give a maximum production of 150 tons daily. Both companies boast exceptionally well-equipped carton plants. Sutherland specialized in waxed cartons, and Standard in dry cartons. Their product is used by many of the largest concerns in America. Employment is given to between 750 and 800 men and women.

Officers of the Standard Paper Company at the time of the merger were: president, J. B. C. Dickinson; vice-president, James H. Dewing; secretary-treasurer, Alexander L. Clark; general manager, J. F. Bryne.

Bartlett C. Dickinson, Kalamazoo, was recently appointed city commissioner to fill the vacancy caused by the death of Mayor Ernest A. Balch. Mr. Dickinson is a native of Kalamazoo, and for fifteen years served as president of the Standard Paper Co. of that city. He will retire from active business in consequence of the consolidation of the Standard and Sutherland Paper Companies.

Hawthorne Mill Installing Pasting Machine

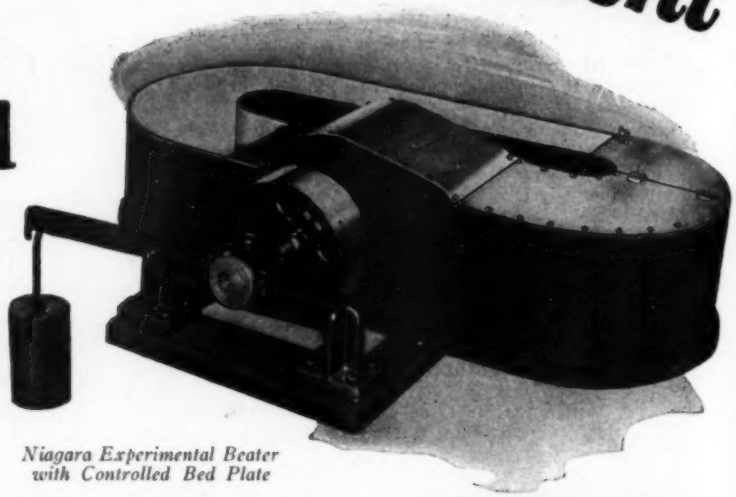
In order to supply the constantly growing demand for multiple ply fine papers, the Hawthorne Paper Co. is installing a pasting machine and it will be in operation in a few weeks, according to George H. Gerpheide, president of the company. This will be used in the manufacture of bristols and heavy papers for announcements.

The Hawthorne Paper Co. was originated 17 years ago this month. The late A. H. Dwight, Chicago, at that time interested Kalamazoo capital in investing in a plant for the production of high grade ledger and writing papers.

A perceptible decline in unemployment conditions in Michigan for the months of May and June has been reported from the office of Eugene J. Brock, commissioner of labor and industry. The decline is attributed to quickening in the furniture and paper industries and to demands of agriculture, lake traffic, and the building industry, which apparently have reached nearly to the height of their activities.

After a shut down the first week in July, the MacSimBar Paper Co. commenced operations this week on its new 142-inch paper machine. Forty-three additional dryers have been installed making a total of 157 dryers for this machine.

A PROFITABLE Investment for Any Mill



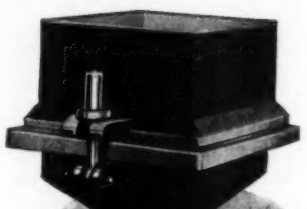
Niagara Experimental Beater with Controlled Bed Plate

Elimination of guessing with its consequent wasted effort, time and materials today is sought by every mill that wants to lower operation costs. As a result Valley Laboratory Equipment is today the accepted means for control. It is an additional aid in the hands of the operator—as necessary as workmen's tools.

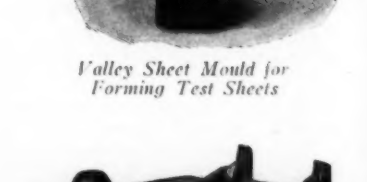
Valley Laboratory Equipment facilitates quick testing of raw materials that enter into the mill's product. It accurately helps solve paper-making problems.

Developed in our cooperative laboratories over a period of six years, every piece of Valley Laboratory Equipment is original testing apparatus. That's why paper mills, research laboratories, universities and technical schools all find Valley Laboratory Equipment meets their particular needs.

The experience of the 92 mills who are using Valley Laboratory Equipment may be of interest to you. Write today for free Laboratory Equipment Booklet.



Valley Sheet Mould for Forming Test Sheets



Valley Hot Plate for Drying Test Sheets

Valley Hydraulic Press for Removing Water from Sheets

VALLEY IRON WORKS CO.

Machinery for Paper and Pulp Mills

APPLETON WISCONSIN

New York Office: 350 Madison Avenue

Western Manufacturing & Sales Division, Smith & Valley Iron Works Co., Portland, Oregon

A new section was put in at the wet end of the machine, and a patent paper carrier in connection with the dryers, making greater production possible.

Launch Paper Mill Project in Bangor

A committee of the chamber of commerce, Bangor, Mich., has been working with Emil Kellner and others for starting a paper mill to manufacture various grades of paper from old newspapers and other waste paper stock.

Officers of the corporation are: president, Emil Kellner; vice-presidents, C. J. Stebbins and J. L. Wolfe; secretary, Emerson A. Orr; treasurer, Arthur Sherrod; directors, Emil Kellner, C. J. Stebbins, I. L. Wolfe, Emerson Orr, Arthur Sherrod, F. Wormbrand, A. L. Robbins, J. Webster and H. P. VanderGiesen.

Financing is in the hands of a New York firm. Buildings will be started as soon as the financing is completed.

Stephen Richmond, 67, of 726 Wheaton Ave., employed at the Kalamazoo Paper Co. mill, sustained injuries when he fell down stairs at the plant recently.

BRITISH CORRESPONDENCE

Increase of Exports Over Last Year

Analysis of the latest Board of Trade returns respecting paper shows that foreign trade has been satisfactory. Exports for the year have steadily improved and for the first five completed months are 1,500 tons in excess of last year. This, in spite of the fact there was a drop of 1,546 tons in printing papers, the principal line of export.

Home trade for this period proves, after analysis of the figures, to have been very dull, in spite of the continually encouraging reports, which may be explained by the fact that imports have increased to the extent of 9,000 tons, the total for the year to the end of May of imported papers being approximately 340,000 tons. The principal item of imports has been writings and printings, closely followed by strawboards, and then wrappings, although imports of wrappings have steadily inclined since the safeguarding duty got into full working order.

Cut Price on Vegetable Parchment

Following the report last month that Mr. William Harrison, the chairman of the Inveresk Paper Co., Ltd., had recently started a factory in this country for the production of vegetable parchment paper, it is interesting to learn that a foreign cartel immediately cut the price of this material to a level at which it was impossible for the Inveresk Co. to produce economically.

Mr. Harrison drew the attention of the Prime Minister to this state of affairs when speaking as a member of a deputation of the National Union of Manufacturers, which drew Mr. Stanley Baldwin's attention to existing procedure in connection with the safeguarding of industries. Mr. Harrison said that if the foreign producers by their cutting methods succeeded in closing down his factory, which he had recently started at the cost of some hundreds of thousands of pounds, the price of vegetable parchment paper would at once be raised to its previous level or higher, and yet the Board of Trade had refused a committee on the ground that the foreign importation was not normal. It is felt in the trade, however, that, in view of the ever-increasing imports of paper, that the British papermakers will stand a good chance of getting all kinds of paper included in the safeguarding act.

Stationers Hold Exhibit

At the end of June, a British Stationery Exhibition was held at Stationer's Hall, London, opened by the Master of the Stationers' Company—one of the City Livery Companies. One of the main objects of the exhibition was to emphasize that the best paper was made from rags in British mills. Visitors were asked to buy their notepaper by the watermark, because, for the purpose of the exhibition, all branches of the trade had sunk their identity to provide an anonymous display that was representative of the best modern stationery.

Sir Rowland Blades, president of the Federation of British Industries, and ex-Lord Mayor of London, pointed out that the fame of British paper was no new thing. A Papal Bull issued by Pope Alexander VI in 1494 was inscribed on English paper; but when Marshal Foch became generalissimo of the Allied Armies in 1918, his letter of appointment, signed by Monsieur Clemenceau and Lord Milner, was written on very inferior paper. "In one-hundred years," Sir Rowland said, "that historic document will have crumbled; but the Papal Bull of 1494 will still be untouched by the ravages of time."

Visitors from U. S. and Canada Entertained

Several notable men in the paper and allied trades have this year crossed the Atlantic to spend a few weeks in this country. Among them have been Mr. Edward Beck, secretary of the Canadian Pulp and Paper Association, and Mr. Hamilton, a well-known printer and stationer of Detroit, U. S. A. These two gentlemen were, with their wives entertained at luncheon at the Hotel Cecil by members of the London paper trade, recently. Mr. Beck was already well-known to many in this country having officially visited the first British Empire Exhibition at Wembley on behalf of the paper makers of Canada.

Mr. Beck gave unstinted praise to the papermaking methods that he had seen in practice in this country, and to the economical manner in which the various processes were carried out, contrasting, as he pointed out, very vividly with the waste that is characteristic of much that is done in the mills of Canada.

Following Mr. Beck's remarks, one trader expert stated that it is surprising how many well-informed people fully believe the bulk of the newsprint used in this country comes from abroad. The lorry loads of imported reels that pass along the streets from docks to printing works clearly proclaim their source of origin. This is necessary by Act of Parliament; but as far more numerous loads of British newsprint reels usually bear no marks to show where they are made, the general public may be forgiven if they get into the habit of thinking that all are of foreign make. Production statistics and import returns tell us very clearly that such a supposition is far from the truth; but the idea is there and with nothing of a visibly telling nature to dispel it, the thought that for anything cheap and at the same time efficient we must look to the foreign makers works tremendously in their favor. The latest production statistics are for 1924, and these show that in that year British mills made 550,000 tons of newsprint, and that during the same period total imports of the same class of paper were about 150,000 tons. Since then, the productive power of British mills has been tremendously increased, and although imports have also increased, it is reasonable to suppose, in the absence of reliable figures that the proportion is still 11 to 3 in favor of the British papermaker.

Import and Export Figures

Below are set out the values of imports and exports for the paper trade in June, together with the increases and decreases as compared with the corresponding month of the two preceding years:—

IMPORTS.	June, 1928.	Increase (+) or Decrease (—) as compared with 1927.	as compared with 1926.
Paper-making Materials..	1,027,725	+25,381	—285,315
Paper and Cardboard.....	1,474,183	+119,044	+124,623

Quantities of the same articles imported:

	June, 1926.	June, 1927.	June, 1928.
Wood pulp, tons.....	159,611	124,137	134,213
Paper, cwt.....	1,316,820	1,415,003	1,635,913

EXPORTS	June, 1928.	Increase (+) or Decrease (—) as compared with 1927.	as compared with 1926.
Paper-making Materials..	130,677	+21,434	+13,749
Paper and Cardboard.....	797,651	+127,237	+178,745

Quantities of the same materials exported:

	June, 1926.	June, 1927.	June, 1928.
Paper-m'k'g Mater'ls, tons	12,451	13,490	18,269
Paper & cardboard, cwt...	282,154	295,804	403,438

The honor roll in Canada

Bowser lubrication and filtration systems serve many of the Canadian pulp and paper mills, as shown below. These installations are giving real satisfaction, as is attested by the repeat orders. Here is the honor roll:

Anglo-Canadian Pulp & Paper Mills, Limilou, Quebec—
4 systems serving 4 Walmsley paper machines—width, 234 inches

Canadian International Paper Co., Gatineau, Quebec—
2 systems serving 4 worm-driven paper machines—width, 370 inches

Canadian International Paper Co., Three Rivers, Quebec—
2 systems serving 4 worm-driven paper machines—width, 245 inches

Donnaconna Paper Co., Donnaconna, Quebec—
1 system serving Walmsley paper machine—width, 234 inches

E. B. Eddy Company, Ltd., Hull, Quebec—
1 system serving Walmsley paper machine—width, 234 inches

Kenora Paper Mills, Kenora, Ontario—
1 system serving Bagley-Sewall machine—width, 234 inches

Lake St. John Power & Paper Co., Montreal, Quebec—
1 system serving 2 Dominion machines—width, 245 inches

Manitoba Paper Co., Pine Falls, Manitoba—
2 systems serving 2 Pusey & Jones paper machines

Port Alfred Pulp and Paper Corporation, Port Alfred, Quebec—
4 systems serving 4 Bagley-Sewall machines

Powell River Paper Co., Powell River, B. C.—
2 systems serving rear sides of 2 Walmsley paper machines—width, 234 inches

St. Anne Paper Company, Beaupre, Quebec—
2 oiling systems serving 2 Dominion machines—width, 245 inches

St. Lawrence Paper Mills, Three Rivers, Quebec—
4 systems serving 4 Dominion machines—2 170 inches and 2 245 inches

St. Maurice Valley Corp.—
Belgo division, 2 systems serving 4 Walmsley machines;
Three Rivers division, 1 system

Wayagamack Pulp and Paper Co., Three Rivers, Quebec—
1 system serving 2 Walmsley machines—width, 234 inches

Spruce Falls Pulp & Paper Co., Kapuskasing, Ontario—
2 systems serving 2 Dominion machines—width, 245 inches

Thunder Bay Paper Co., Port Arthur, Ontario—
2 systems serving 2 Beloit machines

Great Lakes Pulp & Paper Co., Fort William, Ontario—
1 system serving 1 Bagley-Sewall machine—width, 310 inches

The experience of the Canadian mills parallels that of those in the United States and other countries where the very best of lubricating equipment is required—Bowser systems are preferred, and *do* give continuous satisfaction. We'll be glad to give the complete facts. The coupon is for your convenience.

S. F. BOWSER & COMPANY, Inc.

Complete Lubrication Equipment

1315 Creighton Avenue

FORT WAYNE, INDIANA, U. S. A.

58 Fraser Avenue, Toronto, Canada

S. F. BOWSER & CO., Inc.
1315 Creighton Ave.,
Fort Wayne, Ind.

Kindly send me bulletins on paper mill lubrication, especially for _____ machines.

Name _____ Address _____

Canadian News

May Appoint Dictator for Newsprint Mills

There is some talk of negotiations being under way to secure the appointment of a dictator to regulate the production of the Canadian newsprint mills to save the industry from cut-throat competition. So far, two names have been suggested for the appointment: namely, Frank P. Jones, formerly general manager of the Canada Cement Co., and Hubert Biermans, formerly managing director of the Belgo-Canadian Pulp and Paper Co. It is stated that the lead in this direction comes from the larger groups, but that several of the smaller companies have signified their willingness to co-operate. The progress of events is being watched with keen interest and it is hoped that the negotiations will be successful. Bankers, investors, business men, provincial governments and other representative bodies are viewing the situation with anxiety, and it is expected that the steps now being taken may be so constructive as to enable this great industry to pass safely through the factors which have been looming up on all sides during the last few months.

It is understood that the Government of Quebec is in hearty sympathy with these efforts. Premier Taschereau, of Quebec, recently had a lengthy conversation in Montreal with Hon. William Finlayson, Minister of Lands and Forests in Ontario, at which were also present Hon. Honoré Mercier, Minister of Lands and Forests in the Quebec Government, G. C. Piché, chief engineer of the department. Though not wishing to commit himself, Mr. Taschereau, after the interview, made the following statement:

"The overproduction of paper in both provinces is enormous. Prices have fallen considerably. The time has come for both provinces to come to a mutual understanding. Hon. Mr. Finlayson and Hon. Mr. Mercier have discussed the question before our chief engineer and myself. Mr. Finlayson has full power to come to an agreement. Both governments see the problem from exactly the same angle. In a very near future our common decisions will be announced to the public. Should it be necessary—though I do not think it will be—we might wait until Hon. Mr. Ferguson's return from Europe, but something quite satisfactory is bound to come out of our conversations on the matter."

In the meantime, through the efforts now on foot, no mills are setting lower prices and all are hoping for the success of the present negotiations. What has to be done is to set up suitable machinery which will permit the producers to get along and, at the same time, limit production to an extent that will allow the maintenance of quotations at their present level. Whether such machinery will take the form of a dictator chosen by the industry has not yet been decided as negotiations have not proceeded far enough as yet; but the fact that they are under way is encouraging and the outlook is viewed with a considerable degree of confidence.

The recent visits of A. R. Graustein, president of International Paper, of Geo. Chahoon, president of Laurentide, and of other newsprint executives, has also given rise to considerable comment. It was thought they were trying to arrange price-fixing for newsprint on an international scale, but this is denied. It is admitted, however, that there was a proposal to eliminate the economic waste of shipping newsprint back and forth across the Atlantic, but nothing came of this, the only result being the formation of an international statistical service.

Lower Operating Rate Due to Increased Capacity

Some surprise has been expressed that the ratio of production to capacity in connection with the May figures of newsprint was only 80.8 per cent, while in April, with a considerably smaller output, the ratio was 84.3 per cent. The explanation is that during the month of May Canadian mills were credited with operating at a total capacity of 205 tons more than the April average, the total for May being 9,342 tons daily, as compared with 9,137 in April.

At the end of December, the rated capacity of Canadian mills was only 8,500 tons, so that new machines with a capacity of 842 tons daily have been brought into operation in Canada since the beginning of the current year, and there will be still further increases during the summer owing to the starting up of the Spruce Falls machines at Kapuskasing. Had there been no increase in tonnage, the records would have shown a capacity of 8,500 tons and an average daily output for May of 8,370. This would have meant that the mills in the Dominion were operating at between 97 and 98 per cent of capacity, as was actually the case for a number of months in 1926. The additional tonnage added, however, since the beginning of the year left nearly 1,000 tons capacity idle during the month of may.

Check Ravages of Spruce Budworm

The Governments of Canada and Ontario and one of the large pulp and paper companies operating in Ontario, will be associated this year in the work that is being undertaken in the effort to find a weapon wherewith to resist the attacks of the spruce budworm on forest trees. The work will be carried on with the aid of aeroplanes, which will be used to dust the trees in twelve ten-acre plots near Westree, west of Sudbury, Ont., with calcium arsenate. The aeroplanes and their pilots will be supplied by the Canadian Air Force. Scientific investigators will be furnished by the entomological branch of the Dominion Department of Agriculture, and assistance in the conduct of the experiments will be given by the Forestry Branch of the Ontario Department of Lands and Forests and by the Spanish River division of the enlarged Abitibi Co.

The Royal Commission on Pulpwood, appointed in the summer of 1923, estimated the damage wrought by the pest in the balsam-spruce stands in Eastern Canada during the ten years ended in 1924 at probably 150,000,000 cords; and another authority has estimated that the loss since 1909 through this cause has reached 200,000,00 cords of pulpwood.

Hearst Suit Countered by Newsprint Seizure

As a counter to the suit for $24,000,000 damages brought by the Hearst interests of New York against Canada Paper Sales and nine Canadian newsprint manufacturing companies, claiming malice and bad faith, the Canada Paper Sales Co. last month began action for $978,630.15 against the Newspaper and Magazine Paper Corporation of New York and Wm. Randolph Hearst. At the same time the plaintiffs sought a writ of seizure before judgment to permit them to seize shipments of paper consigned from Quebec mills to the American defendants, and demand was made that such paper be sold up to the amount of the claim. Under a court order, 45 cars of newsprint were held under seizure.

The contestation by the Hearst interests was heard before Mr. Justice Duclos in the Practice Division of the Superior Court at Montreal, as a result of which the seized newsprint was ordered to be released upon the defendants or mis-en-cause giving good and sufficient bond for the full amount of the claim of $978,630.35, with interest and costs to date, and upon further payment of $2510 demurrage charges to the Canadian Pacific Railway and the Canadian National Railways.

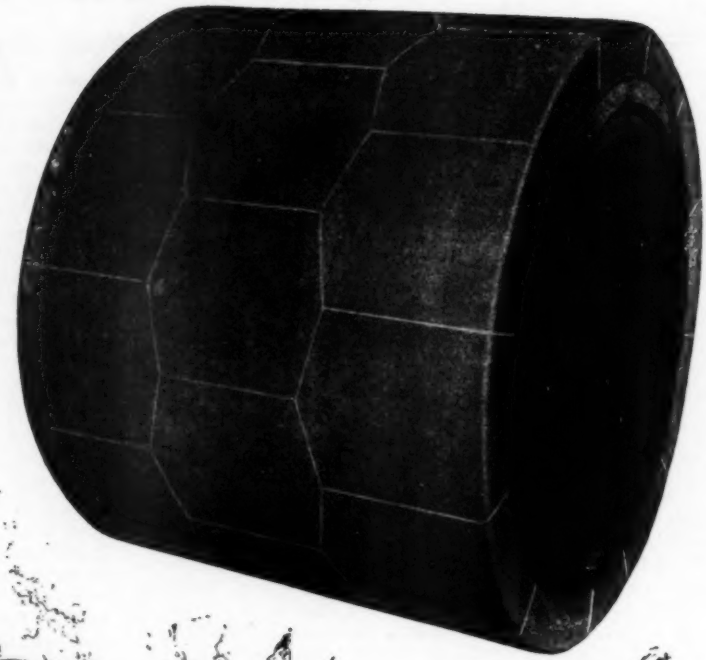
Hearing of the main action on the merits will probably take place in September or October.

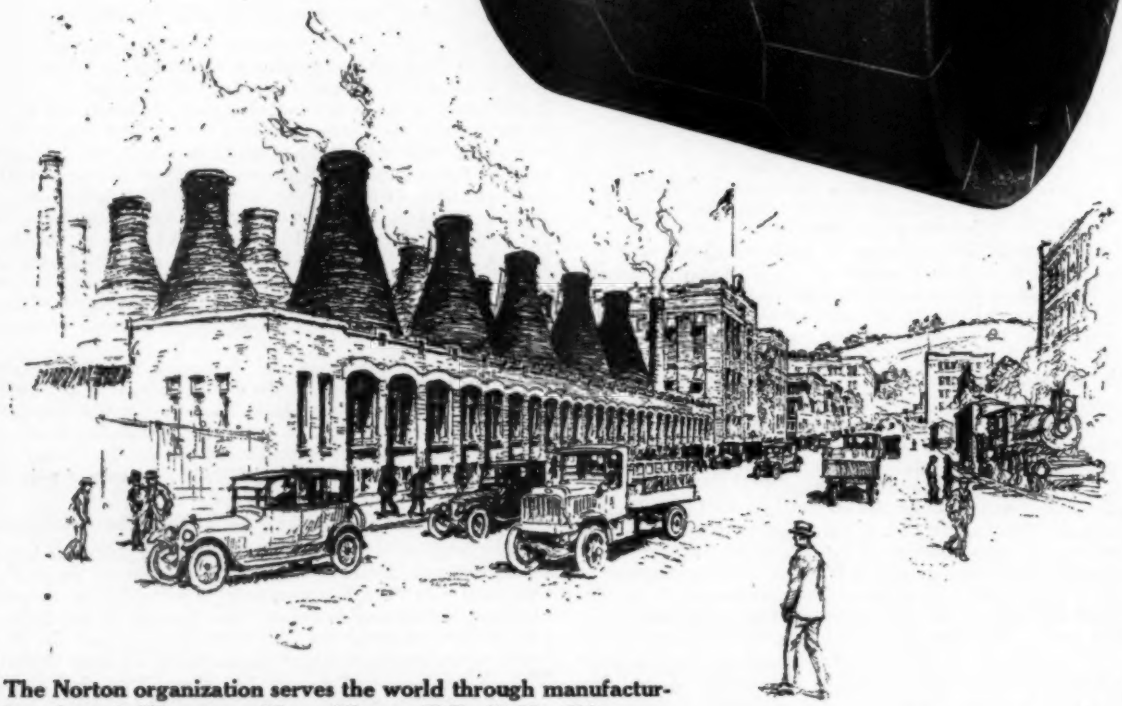
Paper Standardization Being Worked Out

A distinct step in advance was made in Toronto on July 10 when a meeting of printers, lithographers, paper whole-

Norton Grinding Wheels

The NORTON PULPSTONE is one of scores of Norton abrasive products made to meet specifically the needs of industry.





The Norton organization serves the world through manufacturing plants in Worcester, Mass., Niagara Falls, N. Y., Chippewa, Can., Bauxite, Ark., Hamilton, Ont., La Courneuve, France, and Wesseling, Germany.

NORTON COMPANY, WORCESTER, MASS.

Canadian Trade Now Supplied from Canadian Plant

NORTON

Grinding Wheels
Grinding Machines

Refractories-Floor and Stair Tiles

salers and paper manufacturers was held to reach an agreement for the standardization of weights and sizes of papers to be turned out by the mills and handled by the wholesalers for the printing and lithographing trades. The principle of the proposition was adopted by the representatives of the industries present from Quebec and Ontario, and it was agreed that a committee should work out some further details and prepare a report to be submitted at a further meeting to be held in Montreal in the near future.

The project aims at the elimination of a lot of sizes now being handled by many wholesale houses and the standardization of other lines as to both weights and sizes.

Alex. Béique, who recently resigned as general superintendent of the paper mill at Cornerbrook, Newfoundland, is on a business trip to Norway, and expects to spend a few months at the Fullum Traeslibin, Honefus.

E. A. Charlton, vice-president and general manager of International Paper Co. of Newfoundland, has selected seven young men from a large number of applicants, who will be sent to study paper manufacture in the Three Rivers and Gatineau mills of Canadian International Paper Co. All travelling expenses from and to Newfoundland will be borne by the company. The intention is to start them in at the bottom and have them work in the different departments of the mills, the initial salary being $25.00 a week. When these young men have been thoroughly trained, they will be brought back to work in the Cornerbrook mill.

QUEBEC

New Bond Issue by Rolland Paper

Public offering of $2,500,000 Rolland Paper Co. of 5.5 per cent mortgage bonds has been made by Royal Securities Corp. Issuance of these bonds follows the recent successful offering of $1,500,000 6 per cent preferred stock of the same company.

The new Rolland Paper Co. is the successor to the company of the same name which since 1882 has been a leading manufacturer of high grade bond, writing and ledger papers. It is the oldest producer of fine papers in Canada and has built up a very successful Dominion-wide business, which enjoys an unusual measure of goodwill among the trade by reason of the noted high quality of its products.

The company's mills are located at Mont Rolland and St. Jérôme, and have a present annual capacity of 7,000 tons. Part of the proceeds of the present financing is to be used for the installation in St. Jérôme of an additional rag paper machine, with auxiliary equipment, which will bring the total capacity of the plants to more than 8,200 tons per annum.

The early construction of the paper mill of the James MacLaren Co., Ltd., in the vicinity of Thurso is apparent from the fact that a by-law for exemption of taxes has been approved by the Buckingham Council. The mill will cost several million dollars and will have a staff of some 200 men when completed. It is expected that 600 or more men will be employed in the construction work. The commutation of taxes fixes the taxable valuation of the mill at $200,000 over a period of twenty years. It does not come into force until approved by the electors and by the Legislature of Quebec.

Paperboard Co. Bond Offering

Offering of an issue of $240,000 first mortgage 7 per cent sinking fund gold bonds, due April 1st, 1937, of the Canadian Paperboard Co., Ltd., was made recently by Johnston and Ward, Montreal investment dealers.

Proceeds of this financing will be utilized in connection with the construction and equipment of the company's new mill in Toronto and for the extension and betterment of its operating properties.

The Canadian Paperboard Co. has been in business more than thirty years and at the present time is supplying more than 25 per cent of the requirements of the Canadian trade. The present operating plants are located at Frankford and Campbellford, Ont., and at Montreal.

Price Bros.' mills at Chicoutimi, on the Saguenay River, will receive a supply of 35,000 tons of coal for its winter supply, and it will be hauled from Charlotte, N. Y., in the bottoms of the Hall Coal and Transportation Co. of Ogdensburg and Montreal, of which Frank A. Augsbury, president of the Algonquin Paper Co. of Ogdensburg, is the head. The contract was awarded a month ago at Ogdensburg, when Mr. Price paid a visit to Mr. Hall and incidentally visited the mills of the Algonquin Paper Co.

W. N. Hurlbut, formerly connected with the Spanish River Pulp and Paper Mills, who recently resigned as president of the Canadian News Print Co., has been elected a vice president of International Paper Co. Mr. Hurlbut, who recently joined the executive staff of the company, has been identified for many years with the pulp and paper industry in the United States and Canada.

Combustion Engineering Corp. has been awarded a contract for supplying a complete pulverized fuel system, including mills, burners, water-cooled furnaces and air preheaters, for two 800-h. p. Kidwell boilers for the new steam plant to be erected by the St. Lawrence Paper Mills Co., Ltd., in connection with the expansion of their 300-ton newsprint mill at Three Rivers to a capacity of 450 tons a day.

Dan Dupuis, who was connected with the Anglo-Canadian Pulp and Paper Mills, of Quebec, as paper mill superintendent, has severed his connection with that company and returned to his home in Oregon. His position has been filled by Lew Corcran, who, for some time, was paper mill superintendent at the Bromptonville mill of the Brompton Pulp and Paper Co.

Construction of the new Jenssen acid tower at Laurentide Co. is now completed. The old acid tower is to be torn down as soon as the new one has been put into operation. The top of the old tower was brightly illuminated and could be seen for miles around. The new tower, however, is built on a lower level and is not as high, so that the old, rather outstanding landmark will disappear when the old tower is taken down.

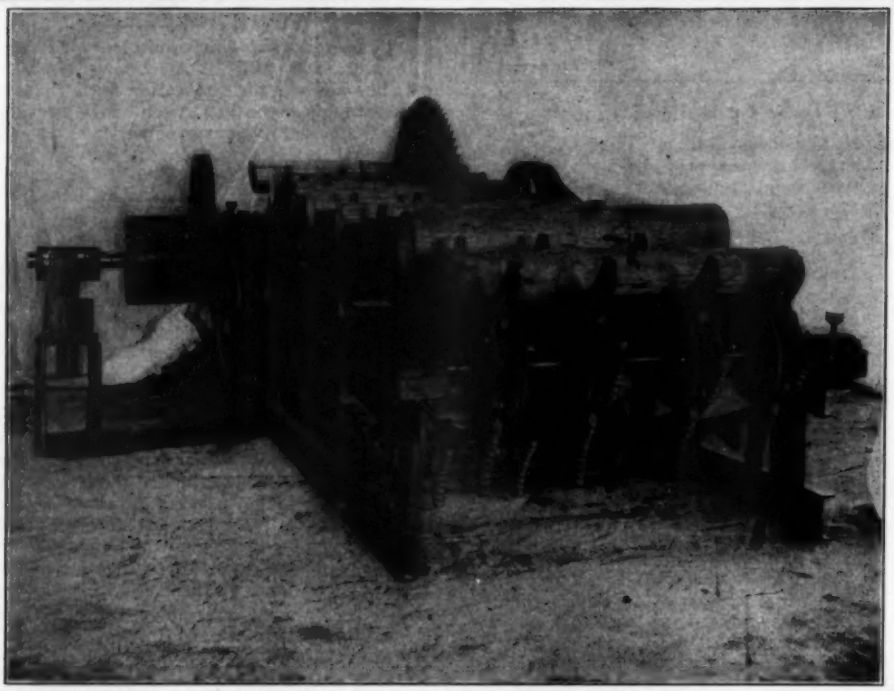
Work is progressing very favorably on the two Minton vacuum dryers being built at the Chas. Walmsley plant in Longueuil. These vacuum dryers are for the Riverbend mill of Price Bros. and Co., and are the largest ever made. Great care is being taken in every detail of construction and each section will be fully tested before shipment is made. In spite of the very large plant at Longueuil, it will probably be necessary to put up some temporary construction to house the numerous large patterns and sections of these two dryers.

The Howard Smith Paper Mills, of Montreal, are rushed with business at the present time. The outlook for fall trade is most promising. The extra demand comes largely from an increase in Canadian business which is running considerably ahead of this time last year. Among other new contracts, it is understood that the company has secured some new business from one of the provincial governments which is proving a profitable source of revenue.

It will doubtless be recalled that the Anglo-Canadian Pulp and Paper Mills, at Quebec City, a description of which was published in The Paper Industry last March, is largely built on land reclaimed from tidal flats by filling in with sand and rock pumped from the river bottom. A rumor was recently circulated to the effect that the mill had had to close down owing to trouble with the foundations that had begun to shift. The lack of basis of this rumor is shown by the fact that the mill is at present operating all four machines and turning out 400 tons of paper a day, half of

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

SINGLE SAW SLASHER



The RYTHER Single Saw Slasher is built for reducing four foot wood to two foot lengths. The construction is of steel throughout. The average capacity of the unit is twenty-five cords per hour and twenty-five horsepower is required for operation. A direct connected motor drive can be provided. The arbor design can be altered and the equipment used for trimming four foot wood to length if desired. This slasher may be combined with any cutting up system or arranged for hand feeding direct from cars or platform.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

which is being sold to the Hearst newspapers. Were it not for the present over-expansion of the Canadian newsprint industry, the machines would be speeded up to their rated capacity of 500 tons a day.

Shawinigan W. and P. Acquires Laurentide Power

It was learned a few days ago on good authority that the Laurentide Co., Ltd., has disposed of its holdings of Laurentide Power Co., Ltd., to the Shawinigan Water and Power Co. at $150 in cash and one share of Shawinigan no-par-value stock for each share of Laurentide Power. The confirmation of this deal, it is understood, will come within a reasonably short time, after the necessary meetings of shareholders have been held and the offer extended to shareholders in general.

The Lake St. John Power and Paper Co. is working night and day slashing and stacking its winter's supply of pulpwood. It is planned to cut and store about 140,000 cords of wood this summer. The stacker is one of the most efficient and up-to-date in the country. It works from a pivot and runs on a circular track working almost a 360-degree swing. It can be moved to any position in the circle while in operation. About 6000 to 8000 cords of pulpwood escaped into Lake St. John during the recent spring floods, but this has been reclaimed and will be brought back to the mill.

J. H. Wallis, who for the past two years was purchasing agent for Ste. Anne Paper Co., has recently severed his connection with that company and is now general manager of Dominion Acetylene and Welding Co., a division of the Dominion Bridge Co. Mr. Wallis' position at Ste. Anne has been filled by John Mackie.

McAvity Stewart has been appointed general manager of Chas. Walmsley & Co., (Canada), Ltd.

St. Lawrence Paper Installing Modern Steam Plant

St. Lawrence Paper Mills, at Three Rivers, is the scene of great activity just now. The construction of the two-machine extension is right up to schedule and all the major contracts for machinery have been placed. The feature of the development will be the steam plant, which will be one of the very few high-pressure systems in Canadian paper mills.

Two 800-h.p. Kidwell boilers, to be built by Canadian Vickers, will generate steam at 400 lbs. This will drive turbo-generators and exhaust at 125 lbs., either direct to the digesters or to the Ruths Accumulator, from which drying and heating steam will be taken at about 25 lbs. The boilers will be fired by pulverized fuel, with equipment from Combustion Engineering Corp.

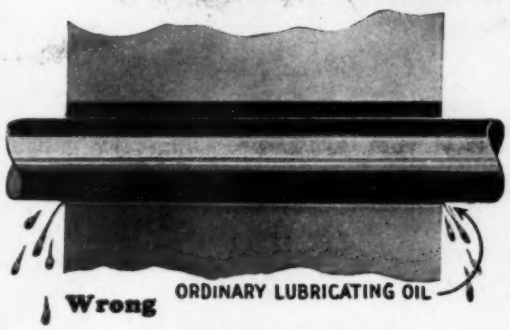
The two 160-inch machines are being built by Dominion Engineering Works. They will be equipped with the improved Westinghouse drive. Harland Engineering Co. motors are to be used for general service and Westinghouse motors for driving the new Voith hydraulic grinders, on order from Waterous, Ltd. A contract for power required in excess of that produced by the turbo-generators has been negotiated with the Shawinigan Water and Power Co.

ONTARIO

Carton and Box Companies Merge

Firstbrook Bros., Ltd., the Rudd Paper Box Co., Ltd., and its subsidiary, Canada Cartons, Ltd., have amalgamated their respective interests and will in future combine activities under the name of Firstbrook Boxes, Ltd. The merger of two of the oldest established concerns in the Dominion manufacturing wood and corrugated fibre shipping containers and paper cartons creates a new company, which will be

How to Lubricate



A thin oil can't hold a heavily loaded shaft in place. It has too little film strength. The oil doesn't stay in the bearing; it runs out onto the floor, product, or machinery; or it evaporates. Metallic contact is inevitable. Wear is excessive. Power is lost.

Grease is generally better than a thin oil because it does possess film strength, but it is far from being the best lubricant. It does prevent metal to metal contact and it stays put. But it is a great power waster. It is too sticky. It is the opposite extreme of a thin oil.

Houghton's Absorbed Oils are ideal because they have both high film strength and excellent lubricating value. They contain a film oil which prevents metal-to-metal contact and a second oil which furnishes the desired slipperiness. One oil is absorbed in the other. Two oils in one. They STAY PUT.

Power is saved. Loss lubricant is used. Products are protected because there is no splattering. Machinery lasts longer. Money is saved in every direction.

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E. F. Houghton & Company

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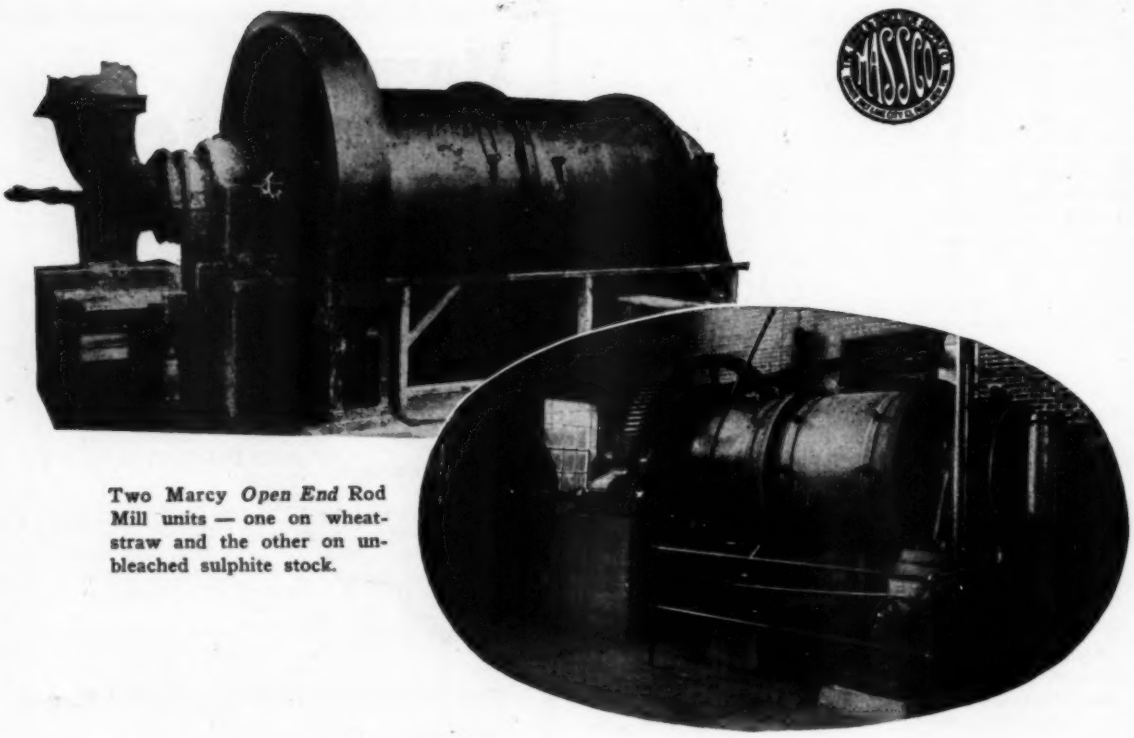


Two Marcy *Open End* Rod Mill units — one on wheat-straw and the other on unbleached sulphite stock.

Avoid Excessive Hydration by *Shortening* the Beating Period

PROLONGED beating of long fibered pulps automatically involves excessive hydration. Yet to introduce too sharp a beating action would cause excessive cutting of fibers.

Both of these undesirable results can be avoided by making use of this new process of beating and refining by rods—a process so effectively carried on by the Marcy *Open End* Rod Mill.

For instance, tests show that a 7′x15′ Marcy Mill, handling 25 tons per 24 hours, will pass the pulp through in 20 minutes and give it a quality equal to that obtained by 7 to 8 hours treatment in ordinary beaters.

Thus, two desirable results are obtained—suitable fibers with minimum hydration. And these are obtained most efficiently in the Marcy *Open End* Rod Mill.

Send for our new illustrated Bulletin No. 75

The MINE and SMELTER SUPPLY COMPANY

DENVER NEW YORK

Licensee under the Marcy Rod Mill Patents

Manufactured in Canada by William Hamilton, Ltd., Peterborough, Ontario

the largest wholly Canadian-owned organization in the industry.

It is understood that production will continue in the present plants until completion of their new plant at Mount Dennis, a suburb of Toronto, where they recently acquired a ten-acre site. The constituent companies will then move their equipment to the new building, which will be larger than the present plants combined, covering a ground area of some 130,000 square feet. The site adjoins the Canadian Pacific Railway tracks, which at this point run parallel with the Canadian National Railway's sidings, and switches will be constructed to facilitate the rapid delivery of raw materials and the dispatch of manufactured goods.

Firstbrook Bros., Ltd., was found in 1867 by Wm. Firstbrook, and has grown steadily in importance, until today the company occupies the leading position in the wooden box industry in Canada. In addition to the Toronto factory a shook mill is operated at Thessalon.

The Rudd Paper Box Co., Ltd., purchased the business of the Elliott Paper Box Co., in 1907, and the present factory, which has since been greatly enlarged, was erected on Richmond St., at that time. In 1924 the Rudd Paper Box Co. acquired exclusive rights for Canada and the British Empire for the use of all the designs, engravings, inventions and cartons originated in the research laboratories of the Robert Gair Co., which is the largest producer of cartons and shipping containers in the world.

Canada Cartons, Ltd., was formed as a subsidiary to the Rudd Paper Box Co. in 1924 in connection with the acquisition of the Gair rights, and has been closely associated with the Rudd organization in their development in Canada.

Firstbrook boxes will supply practically every type of wooden packing box, corrugated fibre shipping unit and paper carton necessitated by industrial demands of the present day. These will be produced by the latest types of machinery under most modern and efficient conditions in the new factory, and these facilities, combined with the savings which can be effected by the centralizing of all activities in one plant, will place Firstbrook boxes in a dominant position in the shipping container field.

The amalgamating companies have impressive records of financial growth, having been largely built up through earnings. It is understood the new company will be controlled and managed by the present executives, John Firstbrook becoming chairman of the board, E. Victor Donaldson president and general manager, and Harold Firstbrook, vice president.

One of the bond issues that at first appeared to make it difficult for Abitibi Power and Paper Co. to wipe out all existing bonds of itself and the subsidiary companies that were brought into the merger was that of the general mortgage 8's. These were issued in 1921 on a ten-year basis, and mature in 1931. The amount outstanding at the present time is $2,794,200, but no provision was made for these bonds being called prior to the date of maturity. This difficulty has been provided for, however, through a deposit with the trustees for the bondholders of an amount sufficient to meet this obligation at maturity. This technically removes this issue from being an obstacle in the way of the $50,000,000 new bonds being considered as a first mortgage lien.

The Hinde and Dauch Paper Co., Toronto, continues to expand, and has acquired a considerable area of ground adjacent to its plant on Hanna Ave., the intention being to build an addition and augment the volume of production of paper board and other lines.

Superior Paper Mills, Ltd., which has been in operation a little over a year at Thorold, is down and in liquidation, and will remain closed until reorganization shall have been effected. This is now taking place and it is expected the outcome will be that the plant will later be devoted to roofing paper manufacture. Superior Paper Mills was organized nearly two years ago, but only got into production about one year ago in the manufacture of colored sulphite bonds, toilets and tissues, together with other specialty lines. Local

UNQUESTIONED SUPREMACY
FOR MORE THAN 75 YEARS

UTILIZATION COST

is determined by comparing the initial cost of a roll to the actual number of operating hours of service or the yardage run secured from the roll.

For nearly a century, the name Waldron has been known for perfection in embossing equipment and mastery in the science of designing and building embossing rolls.

No element in embossing equipment is so subject to varying quality as the paper roll. Yet in none is quality so important. The keenest embossing experts know the futility of judging roll construction and quality by appearance. By specifying Waldron Paper Rolls they are certain of paper quality, sufficient compression, properly proportioned heads and shafts, long life and economical operating service.

Write For Instruction Sheet
On "How A Paper Roll Should
Be Run In."

Copy sent on request.

JOHN WALDRON CORPORATION

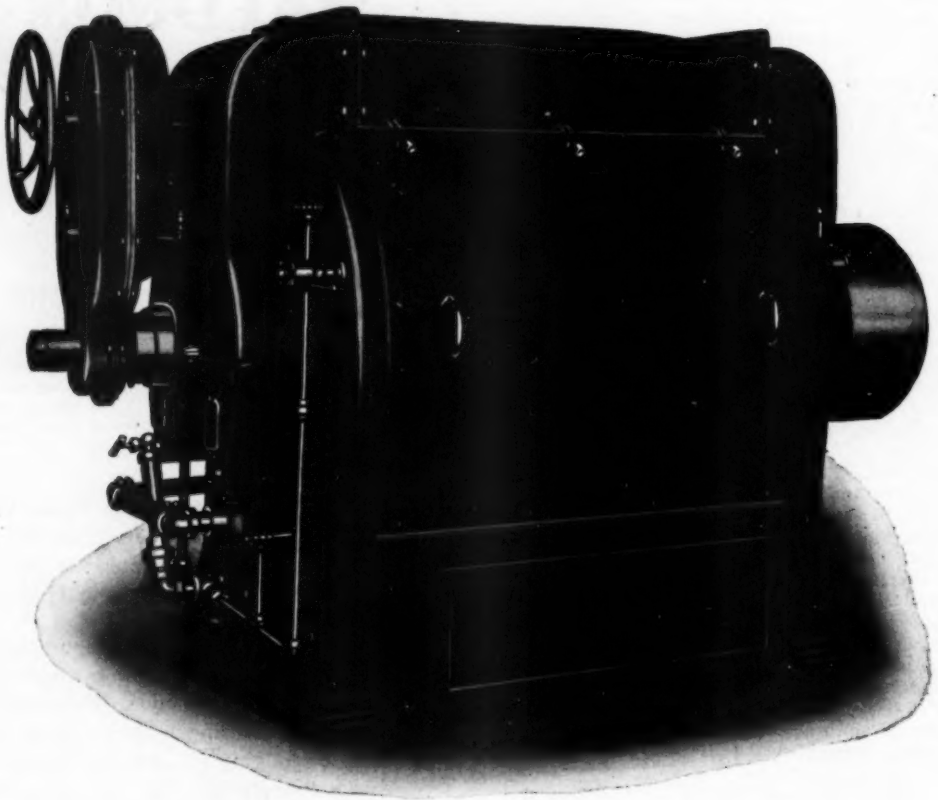
Main Office and Works—New Brunswick, N. J.

30 East 42nd St., NEW YORK
208 W. Washington Street, CHICAGO
303 Lumbermens Bldg., PORTLAND, ORE.

New Birks Bldg.—Montreal, Can.

REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

men were the sponsors of the concern and the venture was a money loser pretty much from the beginning. Several men from other paper manufacturing concerns in the Niagara Peninsula were among the promoters.

Installation of a pipe line between the Thunder Bay pulp mill at Current River and the main paper mill at Bare Point, Port Arthur, a distance of two and a half miles, is now under way. The pipe line will be used for pumping slush stock from the Current River mill, direct from the grinders, and will unite the two plants, making them virtually one mill. It will be brought into operation this fall. The line is similar in construction and purpose to an installation at the Wisconsin Rapids plant, which carries sulphite pulp through a pipe line over four miles long. The pipe was made by the Canada Iron Foundries, at Fort William, and the stock will be handled by an eight-inch Hayton centrifugal pump manufactured by the Port Arthur Shipbuilding Co.

Spanish River Part of Abitibi

Spanish River Pulp and Paper Mills, Ltd., are now an integral part of Abitibi Power and Paper Co. as a result of a recent order of the liquidator. The three mills of Spanish River are being operated under the name of the Sault Ste. Marie Division, Espanola Division and Sturgeon Falls Division of Abitibi. The properties are under the management of George R. Grey, vice president of Spanish River Pulp and Paper Mills.

Good progress is being made in connection with the plan to bring all the properties of the companies that were absorbed by Abitibi into the one organization, from a physical as well as from a financial point of view.

Hon. Wm. Finlayson, Minister of Lands and Forests for Ontario, has announced that his Government will proceed at once with the erection of a storage dam and power plant at Ear Falls, on the English River, Morrow and Beatty having already been awarded the construction contract on a cost plus basis. The building was authorized by bills passed at the last sessions of the Manitoba and Ontario Legislatures and of the Dominion Parliament. The power house being erected by the province as part of the dam is expected to provide for the future development of the Red, Woman and Narrow Lake mining sections, as well as to supply adequate power for any paper manufacturing that might be developed. It will also make available a surplus of power that can be used in Kenora if necessary.

The Dryden Paper Co. broke all records in the production of kraft paper during May. The idea was to pile up a stock that would be available as soon as operations begin for the making of the paper into bags by the Bates Valve Bag Co. This work is expected to start shortly and this new outlet will require a good many thousand tons of paper in addition to the present market for the company's product.

A most distressing accident occurred at the plant which Canadian Paperboard Co. is constructing at Toronto. Owing to the breaking of a chain, a huge ash hopper, weighing 1500 lbs., fell as it was in process of being installed, killing two men and injuring four others.

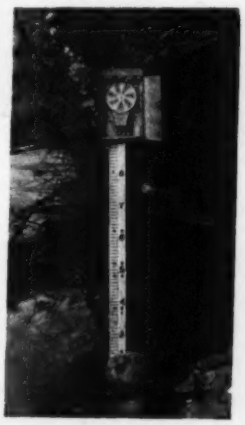
At the Barber plant of the Georgetown Division of Provincial Paper, Ltd., No. 2 machine room is being enlarged and a new roof put on, which will increase the capacity. A good deal of other construction and repair work is also being done around the plant.

E. J. Zavitz, Deputy Minister of Forestry for the Province of Ontario, will represent the Province at the Imperial Forestry Conference which will be held in Australia from August 20 to October 1st. Accompanied by several Dominion delegates, Mr. Zavitz sailed from Vancouver on the 24th of last month. This conference is the biggest thing of its kind in the world. Every section of the British Empire is to be represented. The fact that Mr. Zavitz is to give a paper

NEW!!

Featured in the above catalog, Paper Mill executives will find many helpful suggestions for applying Bristol's Liquid Level Recording Instrument equipment. For example, to provide a constant check, right in the mill, of water levels being maintained in distant reservoirs, lakes, rivers, tanks, etc.; and the levels of pulp or special process liquids in storage.

Also, where water power is used, the chart record of water levels aids in securing a uniform apportionment, and many times is the means of preventing costly litigation. As one plant engineer remarks: "To accurately determine the uniformity of apportionment at our plant on the Fox River in Wisconsin we installed Bristol's Recording Liquid Level Gauge equipment. These water level instruments both indicate and record head and tail water levels maintained, and enable us to produce at any time authentic records as to water used."



Showing method of installing on side of stream to record height of water.

Other items of interest include: Numerous recent installations, showing Bristol's equipment in actual use—charts, (both round and strip types), showing the kind of record secured—a representative listing of various types of instruments available—Illustrations and description showing method of using Bristol's Long Distance Transmitting and Recording System—Electrical Water Level Recorder for recording Boiler water level—Automatic Electric Alarm Attachment—etc., etc. Send us the names of interested persons in your plant, and we will be pleased to mail them a copy.

The Bristol Company

WATERBURY CONNECTICUT

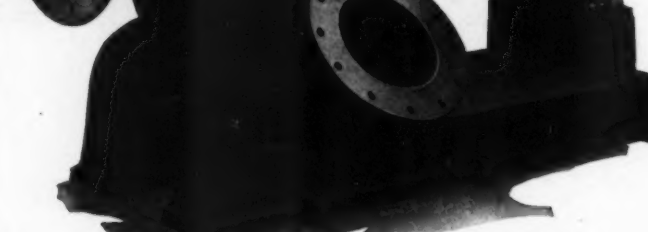
The Overlooked Factor in Mill Operation

Pulley Driven

"Buffalo" Paper Stock Pump

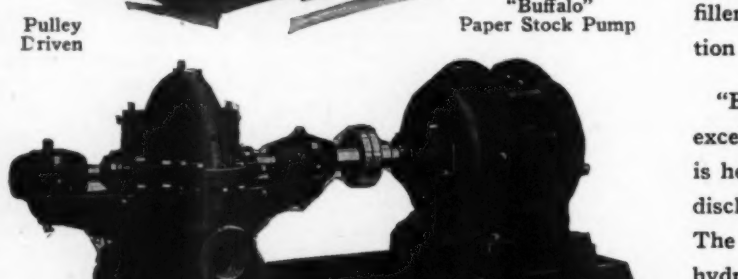
One of the most important factors in the operation of any paper mill is continuity of production. Pumps can paralyze a mill if they fail.

"Buffalo" Paper Stock Pumps, made for either belt or motor drive, have been found very satisfactory because they were designed with a complete understanding of paper stock handling problems. These pumps are non-clogging, even when handling heavy stock. The horizontally divided casing and beveled filler piece with hand hole make inspection very simple.



"Buffalo" Class "S", Pump for General Service

"Buffalo" Class "S" Pumps are unexcelled for general service. The casing is horizontally divided, with suction and discharge openings in the lower half. The impeller is the double suction hydraulically balanced type.



"Buffalo" Class "R. D. S." Multistage Pump

"Buffalo" Class "RDS" Pumps are offered for capacities up to 3300 U. S. gallons per minute and are made extra heavy for working pressures up to 600 lbs. per sq. in. They are of the horizontal shaft "double suction" impeller multistage type, with horizontally divided casing. Built in two or more stages to meet needed conditions.

Write for further particulars.

Buffalo Steam Pump Company
213 Mortimer St. Buffalo, N. Y.
In Canada
CANADIAN BLOWER & FORGE CO. LTD., Kitchener, Ont.

"Buffalo"

Pumps for Paper Mills

before so important and representative gathering is taken to indicate that the rest of the world has its eye on Ontario in the matter of forestry, and on what Ontario has done and is going to do in the direction of forestry and reforestation. The last meeting of the Imperial Forestry Conference was held in this country four years ago, when the delegates spent considerable time in the Timagami district.

The annual picnic of the employees of the Port Arthur Division of Provincial Paper, Ltd., was held recently at Kakabeka Falls. The attendance of employees and their families numbered about 300. The event was declared a big success, and an interesting program of sports was carried out.

Abitibi to Build Office Building in Toronto

The head office of the Abitibi Power and Paper Co. will be moved from Montreal to Toronto and the organization of the numerous subsidiary companies will be centralized in that city as soon as arrangements can be completed for their accommodation. The first step in this important transfer of location came to light late last month when it was learned that the company had purchased the Beatty and Burns properties on Simcoe St., north of Queen St. The area of these properties total 90 by 128 feet and it is proposed in the near future to erect an office building which will house the various inside staffs of one of Canada's greatest power and paper enterprises. L. R. Wilson, managing director of Abitibi, visited Toronto recently and completed the formalities of the purchase. No announcement of the purchase prices of the properties has been made.

The construction plans have not yet been drawn up, but it is stated that the building, while it will not add to Toronto's sky-scrapers, will be equipped with every up-to-date facility for the necessary operations. The height, it is expected, will not exceed four stories, and will provide office accommodation only for the Abitibi interests themselves. As soon as it is completed and fitted up, it is proposed to close the Montreal office, leaving only a small branch to take care of local business.

$400,000 Commission for Sale of Newsprint

Justice McEvoy of Toronto has handed down a judgment allowing Charles E. Campbell, newspaper publisher of Edmonton, Alta., 1 per cent commission on his claim against E. A. Wallberg, or Toronto, and the Lake St. John Power and Paper Co., of Dolbeau, Que. Campbell's claim was for 3 per cent on $40,000,000 worth of newsprint alleged to have been sold to the Newsprint and Magazine Paper Corporation, of New York. The Justice directed the Master in Chambers to take account of dealings, find the amount of newsprint sold by Campbell and deduce therefrom his commission.

Campbell stated that while he was in Montreal he learned that Mr. Wallberg had acquired large holdings of pulpwood with the intention of building a pulp and paper mill and he conceived the idea of persuading Chester Clark, of the Newsprint and Magazine Paper Corp., to buy the paper. He persuaded Mr. Clark to go to Toronto.

Mr. Justice McEvoy found that Campbell and Wallberg verbally agreed that if Wallberg sold any newsprint to Clark through the introduction arranged by Campbell, the latter would receive a commission. He held that the sales on the contract amounted to $30,000,000 to $40,000,000 already and would increase. He ordered periodical findings as to the amount of paper sold and allowance to Campbell of the commission.

D. Munro left Iroquois Falls last month for Beaupré, Que., where he has taken up his new duties as forestry engineer in the woods department of the Ste. Anne Paper Co., an Abitibi subsidiary.

The Howard Smith Paper Co.'s new machine at the Cornwall mill went into production last month on sulphite bonds, litho and offset papers and is said to be working smoothly.

The Paint Purchase that "Carries Through"

ECONOMISTS say that America solves its production problems admirably, but is often crude and wasteful in distribution methods.

To avoid this criticism, we have done more than make Vorcolite a fine paint. We have provided a sure, simple, economical method for getting it on your wall at the lowest finished cost you can possibly attain. Here are the steps!

First, *Buy this fine oil paint.* Vorcolite is a richly pigmented flat white of great covering value, made especially for gun application.

Second, *We loan equipment,* shipping our high speed, economical, trouble proof Vortex Equipment, for use while applying the paint.

Third, *Your labor does it.* An unskilled "handy man" with our equipment does more and better maintenance painting than a whole squad of brush painters.

Painting Equipment is Loaned

Our long continued relations with hundreds of America's largest industrial concerns is your surest guarantee of satisfaction with

Vorcolite

and the VORTEX PAINTING METHOD

Get Vortex check sheet for accurate estimate by filling out coupon and remailing to

THE VORTEX MANUFACTURING CO.
1981 West 77th Street · Cleveland, Ohio

Fill out and mail

VORTEX MFG. CO.
West 77th St., Cleveland, Ohio
Please send us check sheet to outline our painting problem. It is on new construction? _____ Buildings already in use? _____
Company _____
Address _____
Attention _____

V-40

It's 51 *out of* 59 *in Wisconsin*

OUT of the fifty-nine paper mills in Wisconsin, you will find Nash Hytor Vacuum Pumps installed in fifty-one.

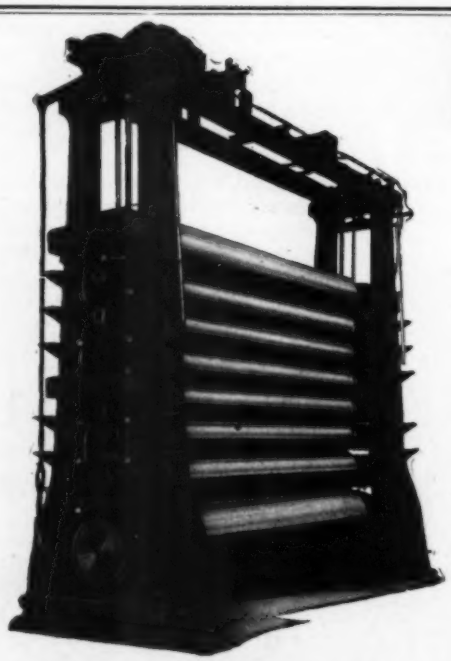
For other states, the figures are:

State	Total No. of Mills	Percentage Using Nash Pumps
California	7	86%
Illinois	31	80
Kansas	3	100
Louisiana	9	80
Maine	28	82
Massachusetts	86	60
Michigan	49	86
Minnesota	8	87
New Jersey	42	65
New York	154	62
Ohio	57	68
Oregon	4	100
Vermont	16	70
Virginia	11	82
Wisconsin	59	86
Quebec, Can.	34	62
	598	

Bulletins describing Nash pumps, available on request.

NASH ENGINEERING COMPANY
164 Wilson Road South Norwalk, Conn.

Nash Hytor
VACUUM PUMPS AND COMPRESSORS



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

This machine is known as No. 9, and is the ninth unit to be placed in commission since the company started operations.

Announcement has been made that H. J. Buncke, chief engineer of the Iroquois Falls division of Abitibi Power and Paper Co., has been appointed chief engineer of the entire group of Abitibi mills. Mr. Buncke joined the company on September 1st, 1916, and has been there ever since except for a short period in 1918 when he was in the American army.

R. T. Steedman has been appointed sulphite superintendent at the Iroquois Falls Division of Abitibi Power and Paper Co. He has been with the company since June 3rd, 1925, when he entered the service division as engineer. In October of the same year he was transferred to the sulphite mill as cook's helper, working there till November, 1926, when he returned to the service division as chemist. On May 1st, 1927, he was appointed assistant superintendent of the sulphite mill, and his appointment shows that ability and hard work combined can obtain promotion.

Dominion Boxboard Mill Started Up

On July 12th Dominion Boxboards Ltd., put the stock over its new board machine at Toronto, and within half an hour after starting the machine was running perfectly and ran for one hour without a break. The machine was then stopped, and started full operation on the following Monday, ready to manufacture all grades of board: chipboard, testboard, bleached manila lined chip, double bleached manila lined chip and patent coated boards of all grades.

The first sheet run was 27-point chip, 102 inches wide, and on calipering this board the variation was only one-half point on this 27-point board.

According to recent advices from Espanola, the paper mill is very quiet, only one of the six machines being in operation. This means that a large number of employees are out of work and many of the houses built by the Spanish River Pulp and Paper Mills are vacant.

The new board mill of Canadian Paperboard Co., on the harbor front in Toronto, has now been completed and the machine is being linked up to the beaters which are rapidly being installed. The board machine has already been pretty well tuned up and the company expects to be in full production by September 1st. The capacity of the mill will be 125 tons a day.

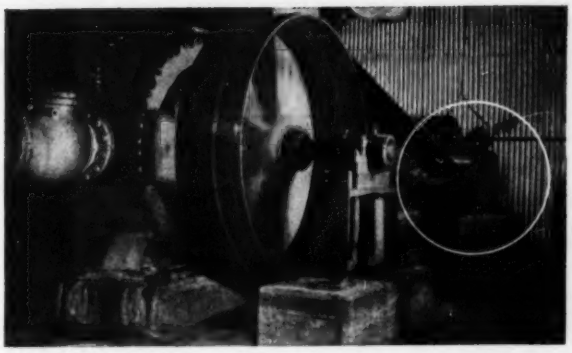
BRITISH COLUMBIA

The project of establishing a large pulp mill on Poplar Island by a company to be known as Fraser River Pulp Mills, Ltd., is making substantial headway. Senator Charles G. Heifner, of Seattle, who has been working on this undertaking for some time past, made a statement of the position. To date, more than $400,000 has been pledged. He has recently interested two outstanding men, one in Vancouver and one in Seattle, each of whom will subscribe $100,000 to the share capital. The Seattle man is at present an officer of another pulp and paper company and will resign that post to become president and managing director of the Poplar Island company. The Vancouver man referred to is Russel F. Barket, president of the National Box and Paper Co.

NEW BRUNSWICK

Frasers to Expand Still Further

The Fraser interests are reported as intending to expend about $4,500,000 in the construction of a new sulphite mill, which will likely be at Athol, a suburb of Campbellton, where they already operate heavily in long lumber. They also own



One of the several LENIX Drives in the Manitoba Paper Company's Mill in Pine Falls. This unit is on a 100 h.p. motor driven Nash pump.

How To Make That Belt Driven Pump Work Better

ELIMINATION of slippage, increase in power delivered, smoothness of drive . . . . . these are the advantages provided by the LENIX Short Center Belt Drive.

The LENIX is a scientifically designed belt wrapper that provides just the right amount of belt-pulley contact; that maintains the proper belt tension constantly and automatically.

Many paper mills are now using the LENIX Drives. They are using them not only on pumps but on beaters and other belt driven machinery.

Why not put the LENIX Drive on your belt drives? You will find operations will be greatly improved.

For the specific units needed write our engineering department, giving all the details.

F. L. SMIDTH & COMPANY
Engineers Incorporated 1895
225 Broadway, New York, N. Y.

The* LENIX *Drive
Trade Mark Reg.

Removes Slime from Pipe Lines—MECHANICALLY

Go Devil

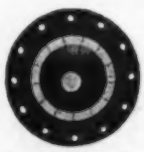
Eliminate costly chemical methods of removing slime from pipe lines. The Hayton Go-Devil does the job **mechanically** in less time and with less trouble.

The Hayton Go-Devil is equipped with a row of hardened steel scrapers or blades arranged in propeller shape to fit the pipe. As the Go-Devil moves through the pipe, impelled by the water behind it, the blades scrape the slime off the walls. Steel guides keep it in alignment. The bends are taken with ease by means of a strong flexible spring.

Just drop us a card and we'll send further details without obligation to you.

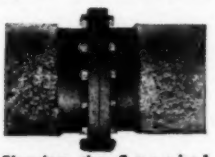
HAYTON PUMP AND BLOWER COMPANY
APPLETON, WISCONSIN

STANDARD-FLANGED-WOOD PIPE



Special Flange for Paper Mills.

Patent Applied for
Manufactured by
MICHIGAN PIPE COMPANY
Office and Factory: Bay City, Michigan
PRODUCTS:
Pipe for conveying—Pure Water, Acid Water, White Water, Sulphite Waste Water, Paper Stock, Ground Wood Pulp, Gases
SPECIAL FITTING FOR ACID WORK WRITE FOR CATALOG
Michigan Pipe for Paper Mills
Liquid Conveyed Touches No Metal



Showing the Special Flange Joint, Light in Weight, Specially Desired for Inside Installations. Easy to Take Apart

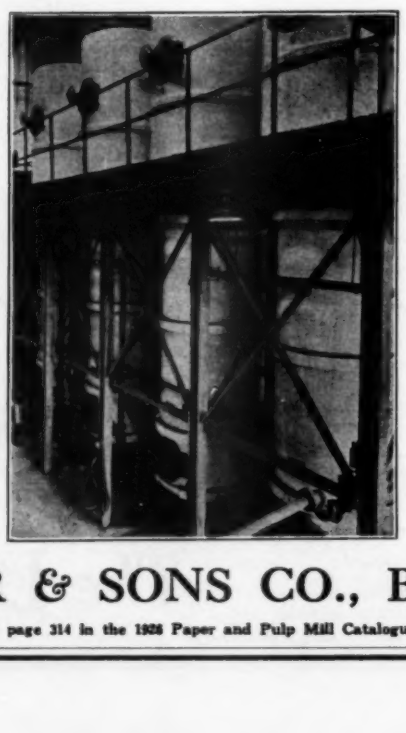
ADVANTAGES:
Saves Power
No Discoloration
Lasting Qualities
Light in Weight
Cheaper.

SERVICE:
We maintain experts who will take entire charge of pipe installations if desired.

OVER 100 PAPER MILLS ARE NOW USING STANDARD FLANGED WOOD PIPE INSIDE THEIR MILLS

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
FIBRE CO.
Canton, N. C.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

large tracts of timberlands in that territory. This will be the second pulp and paper venture for the Restigouche River district. International Paper will build a large mill at Dalhousie, with an ultimate capacity of 400 to 500 tons of newsprint a day with four machines in operation. It is probable that at the outset two machines will be functioning and that the full development will be attained within five years of the opening of the mill.

Fraser Companies are also understood to be contemplating the erection of a new pulp mill at Chatham, on the Miramichi River. If they do not build an entirely new mill, they may enlarge the one that has been operated by them for many years at Millbank, a suburb of Chatham. The intention is to increase the capacity at that point to between 100 and 150 tons per day, at an approximate cost of $2,000,000. They will have company in the building and operation of pulp and paper mills in the Miramichi area as well as in the Restigouche district, as International Paper is also reported to be preparing to locate on the Miramichi with a pulp mill.

I. P. Co. May Build Mill in the Miramichi Area

J. A. H. Henderson of Montreal, a member of the engineering staff of the International Paper Co., has been directing the activities of engineers in the Miramichi River territory. The objective of the party is to ascertain if there is sufficient water supply for a 100-ton pulp mill. On the reports of the engineers will rest the decision of the company as to the site of the new mill. Considerable attention was devoted to the rivers about Chatham and Newcastle, both of which towns are in the running.

The Napan River, about three miles from Chatham, and the Black River, about eight miles from that town, have come under notice of the engineers. As a result of a partial survey made previously by Chatham engineers at the request of the town authorities, it is asserted that plenty of water is available if Chatham is the ultimate choice. Mr. Henderson was assisted in his work by Messrs. McIntosh and Fownes of the International Paper Bag engineering staff at Montreal.

Decision in Inglewood Pulp Case

The decision of the New Brunswick Supreme Court of the case of the New Brunswick Power Commission vs. the Inglewood Pulp and Paper Co. was upheld by the judicial committee of the Privy Council last month. Their Lordships dismissed both the pulp company's appeal and the Power Commission's counter-appeal, both without costs.

The case involved the amount of compensation the Power Commission should pay the company for expropriation of lands. The New Brunswick Supreme Court, Appeal Division, had added 5 per cent interest and $6,000 for fishing rights to an arbitrator's figure of $42,500. The company claimed upwards of $1,000,000, while the Power Commission wanted the arbitrator's original figure adhered to.

No Delay in Construction of Mill

Last month a statement attributed to Alexander Smith, president of Abitibi Power and Paper Co., was published in which he predicted no further development in the pulp and paper industry for the next few years owing to the present excess capacity over production. Premier Baxter took up the matter with International Paper and Fraser Companies. He received a telegram from A. R. Graustein, president of International Paper, in which he refers to a statement given to Dr. Baxter in Montreal on May 20th last, as follows:

"Mr. Graustein agreed for the International Paper Co., that, based on their own timber supply and on increased supply available on completion of the New Brunswick Railways Co. lands purchase, he proposed to commence at once work on the plans for a 100-ton sulphite mill to be erected on the Miramichi, the construction to start during 1929 and to be completed in 1930." Mr. Graustein has now confirmed this statement and said the New Brunswick Railway matter is proceeding favorably. Archibald Fraser, president of Fraser Companies, wrote Hon. Dr. Baxter as follows: "With reference to our conversation over the telephone yesterday

[The full page advertisement shown below appeared in The Paper Industry, December 1927.]

Records of the performance of Warren Stuff Pumps in actual service have proved beyond question that no other stuff pumps meet the severe requirements of the pulp and paper industry so completely. They have put pulp handling on a par with the most modern and efficient pulp and paper making methods. Try one Warren Stuff Pump and compare it with any you are now using . . . then you will know why the leading mills in this country and Canada have specified them as standard equipment. Bulletins if you want them.

Warren

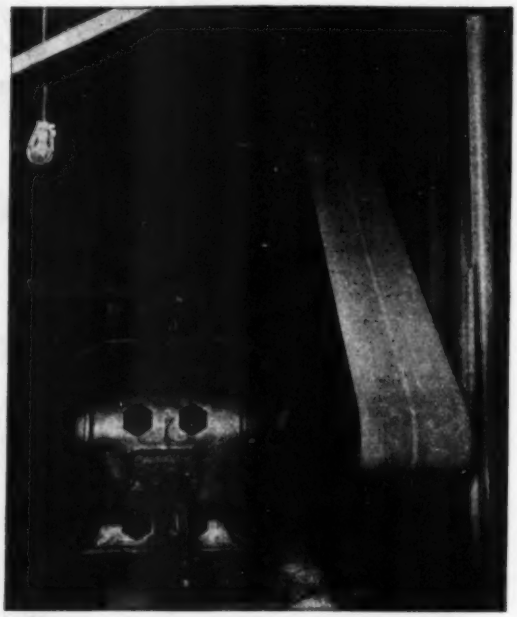
Steam Pump Company

Incorporated

Warren, Mass.

Agencies in all principal cities

2048



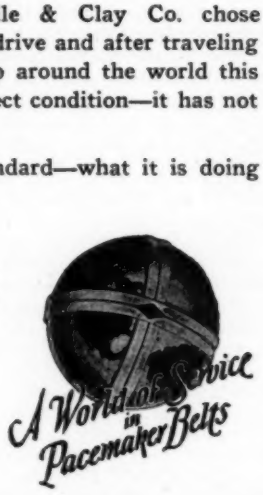
Pacemaker Service
is the kind you'll like

Economy between power and production—that's what you get when Pacemaker Belt is the connecting link.

The Anness Hollow Tile & Clay Co. chose Pacemaker for this hard drive and after traveling a distance equal to a trip around the world this Pacemaker is still in perfect condition—it has not even been tightened.

Pacemaker service is standard—what it is doing here it will do for you.

A 24-inch 6-ply Heavy Pacemaker Belt transmitting 150 H. P. at 720 R. P. M. from a 17-inch motor pulley to a 77-inch shaft pulley only 20 ft. away.



The Cincinnati Rubber Mfg. Co.
Cincinnati, Ohio

PROLONG THE LIFE
of Costly Electric Light Bulbs
by the use of the
THOMPSON SHOCK ABSORBER
or VIBRATION ARRESTER

A new development—substantial in construction—no screws to get loose and fall out. May be used either with or without the Thompson Safety Lowering Switch, or Hanger—as illustrated. The records of one large plant show that the Shock Absorber prolongs the life of the lamps 150% to 500%—under all the varying conditions throughout the plant.

Get complete information—models and variety of springs for different weights of lamps.

THE THOMPSON ELECTRIC COMPANY
1438 West Ninth Street, CLEVELAND, OHIO, U. S. A.

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.
PITTSBURGH, PA.

Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers

RITER-CONLEY COMPANY
General Offices, Pittsburgh, Pa.

THE JOHNSON FRICTION CLUTCH
For Paper Working Machines

Write for Catalog, P. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

regarding certain reports on development on the Miramichi, wish to state that my company has no intention of deferring work that it has agreed to with your Government."

Moreover, construction of the $15,000,000 pulp and paper mill to be erected by International Paper at Dalhousie will commence early this month. The closing date for tenders on the contracts was July 20. The new mill will probably commence operations on a 250-ton basis and extend to capacity production later. The screenings will be used for the making of a common grade of wrapping paper.

The fire-weather forecasting station, recently established at the plant of the Bathurst Power and Paper Co., at Great Falls, on the Nepisiguit River, has been in operation for the past few days, sending wires daily to the headquarters of the Dominion Meteorological Service at Toronto on weather conditions. It is expected that installation of the instruments at the other two stations, Kedgwick and Chipman, will be completed within two weeks. This year's operations are to be largely experimental. The conditions of the forests is reported to be very favorable, with little possibility of fires until the dry period in the fall. The recent heavy rains have safeguarded the woods and aided in the growth of new foliage to such an extent as to eliminate the dangers in this respect for some time.

NOVA SCOTIA

Construction of New Mill Started

Construction activities at Brooklyn, N. S., the site of the new paper mill for the Royal Securities Corp., are now in full blast. Recently, an inspection of the site and work, and also the hydro developments on the Mersey River, was made by a party of officials of the Royal Securities Corp. They included W. C. Pitfield, general manager and vice-president; J. C. McKeen, Halifax representative, and Col. C. H. L. Jones, formerly vice-president of Spanish River Pulp and Paper Mills and now connected with Royal Securities. Brooklyn is situated on tidewater, one mile from Liverpool, N. S.

The Foundation Co., of Montreal, which has held a number of contracts in the Maritime Provinces in recent years, has the contract for the erection of the new mill, and will also be identified with the construction of the power plants. General Superintendent Holland and Superintendent MacKay are directing the construction operations.

MANITOBA

A provincial charter has been granted to the Dominion Envelope and Cartons (Western), Ltd., with head office in Winnipeg, empowering them to buy, sell, and deal in lumber, pulpwood, etc., and to make cartons, boxes, bags, envelopes, etc. The company has taken out a permit for the erection of a new plant in Edmonton, Alta., for which the general contract has been let to L. F. Toby of that city.

ALBERTA

Visions of the establishment a few miles west of Lethbridge of a large pulp mill using $200,000 worth of electrical energy annually, were held up before Lethbridge business men at the weekly Board of Trade Luncheon on June 27th, by G. A. Gaherty, managing directory of the Calgary Power Co. Mr. Gaherty, speaking at the luncheon in the Marquis Hotel, said his company had gone into the pulp mill project for the south, finding a source of timber supply in the Crow's Nest Pass and an excellent site some distance west of the city.

RYERSON

Immediate Shipment from Stock

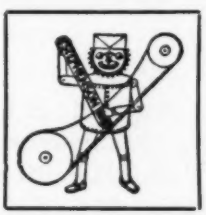
Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL



FORTY YEARS

When an article enjoys steadily increasing sales for forty years it must have merit.

STEPHENSON BAR BELT DRESSING has increased in popularity since 1888. This fact, and it is a fact, should make you wish to give it a trial. A sample is yours for the asking and incurs no obligation on your part.

Sold by most Jobbers.

Sole Makers

Stephenson Mfg. Co.

Albany, N. Y.

STEPHENSON MFG. CO.
ALBANY, N. Y.

Send free sample.

.....

.....

P. I. 7.

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"Go West, young man, Go West."

SO spoke Horace Greeley just about the time that Asa Shuler and J. W. Benninghofen formed a partnership for the manufacture of paper making felts in 1858.

Hamilton, Ohio, where this business was founded was the West that Greeley spoke of. It was the West of those days. Today it is more than 100 miles east of the center of population.

The grandsons of those two men are still making felts, now known as Hamilton Felts.

Three generations of experience! It is this experience that marks the difference between ordinary felts and Hamilton Felts. It is this experience that determines what a Hamilton Felt should be.

Naturally the result is a better felt—one that has the proper strength in combination with great water removing qualities, that is going to produce more and better tonnage, that is going to save in steam and overhead costs, that's going to wear longer, that requires less down time for washing, that will make money for you.

Try *one* Hamilton Felt. There is one to fit your individual needs exactly. Give it every test of use and performance you think a felt ought to have. Then put Hamilton Felts on all your machines.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Ask the Hamilton Felt man—a practical felt man who knows paper making as well as making felts to fit individual mill conditions. Most likely he calls on you regularly. If you prefer, write us direct.

Shuler & Benninghofen, Hamilton, Ohio

Miami Woolen Mills

ESTABLISHED 1858

Hamilton Felts

NEW ENGLAND NEWS

A. W. P. Co. Makes Fine Report

One of the most conspicuously fine earnings and sales reports made by any American corporation so far this year was recently turned in by Sidney L. Willson, president of the American Writing Paper Co. It contrasts very sharply with the understanding of the business conditions in the fine paper industry this year, which it is believed if anything were less favorable than in 1927 from the viewpoint of sales volumes. It also contrasts very vividly with the report of the Federal Reserve Bank which taking employment as an index of prosperity finds Holyoke not so active industrially as in 1927 for the first six months. The reserve bank notes, for instance, that carloadings for June in Holyoke were very low, lowest of the year, though the New England branch of the Reserve Bank did not note a great increase in new construction; but continuing their unfavorable findings in the comparison of New England cities, the bank reported a great decrease in check payments during June and July in Holyoke.

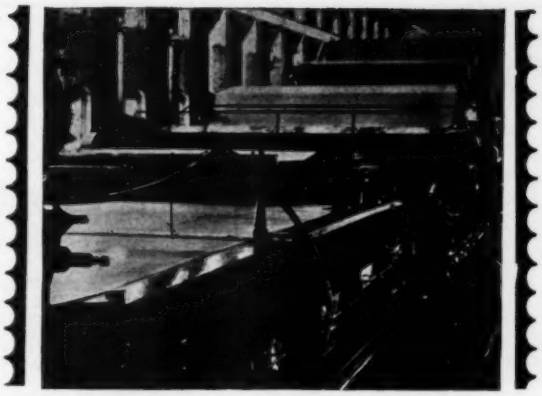
These findings set against the report of Mr. Willson are most impressive, for the net earnings of the American Writing Paper Co., above bonded interest for the first six months of 1928 exceeded by 30 per cent the net earnings for the entire year of 1927, and carrying this remarkable record to a splendid climax we find that this record was made on a decrease of $814,000 in the gross sales for the first six months.

The improvements, therefore, was the direct result of economics set in motion by Mr. Willson and his lieutenants rather than by increased sales. Meantime, the company has made substantial progress in its general rehabilitation of plant program. A large part of this is already accomplished, but there is still considerable on the docket. The latest project is a new power plant for the Beebe-Holbrook and Wauregan divisions plus a new foot bridge connecting the two plants with several other minor installations. Application for permits to start construction have been filed with the city engineer in Holyoke.

Commenting further on the record breaking results of the first six months S. L. Willson, president of the American Writing Paper Co., states the slogan "Better business rather than Bigger Business," has been practically applied by the elimination of less profitable lines and by the greater sales effort made on those remaining.

Besides starting construction work on a new stock building at its plant Tileston & Hollingsworth Co., has broken into the news with a new line of paper. The Boston manufacturers after much research have placed on the market Crinoline Super Plate, which is claimed to be a distinct innovation in papermaking. T. & H. already has made and marketed a grade of English finish known as "Athena." That paper was recognized as an excellent substitute for coated paper on some jobs where halftones of not too fine a screen were to be printed. The new sheet is a further development of the same idea, i. e., the manufacture of a plate paper that would provide for the printer a surface on which practically all commercial art and photography could be reproduced well. The sponsors of Crinoline Super Plate believe it has the advantages of many coated papers at a lower price. At any rate, it is claimed there is nothing quite like it on the market, and it has aroused wide interest.

Another new product of the Bird & Son laboratories is its insulating board which has just been placed on the market. The board is composed of several layers of insulating material of low density of fibrous stock. The low density provides more voids, or dead air spaces. The outside face is rough giving an ideal surface for plastering, while the back is waxed preventing the entrance of moisture. Bird's insulating board is from 10 to 25 per cent lighter than most of the well-known boards now on the market. Between the



NO DETOUR!

WHEN a Fourdrinier machine stops, the production of paper stops.

There's no detour past the Fourdrinier Wire—it alone can form the sheet of paper.

When a wire fails, the Fourdrinier machine must be shut down, valuable paper production comes to a standstill, overhead piles up, and the immense investment in machinery and equipment ceases to earn a profit.

That's why it pays to use Tyler Fourdrinier Wires—they can be depended upon to give long, uninterrupted service.

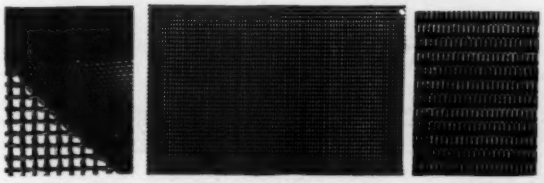
Proven ability to make high-grade paper and to keep production continuous has prompted many superintendents to standardize and insist upon Tyler Fourdrinier Wires.

Try Tyler Wires on your machines.

Supplied in all widths up to and including 234 inches

The W. S. TYLER COMPANY
Cleveland, O.

TYLER WIRES

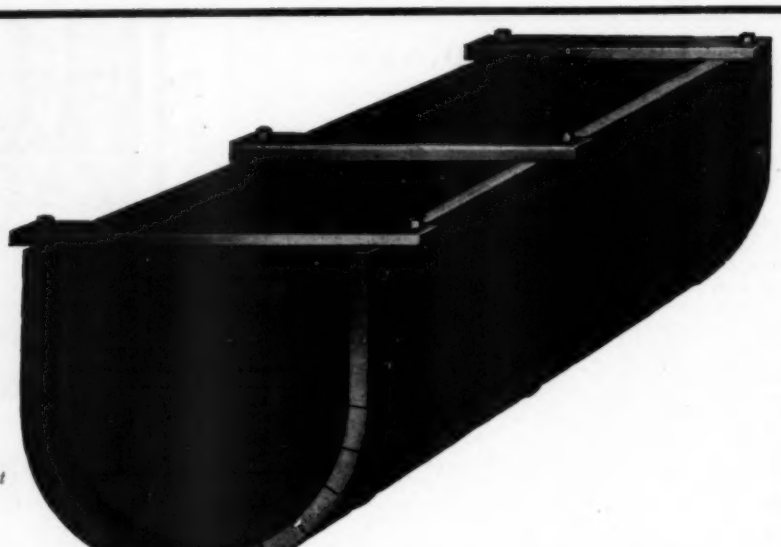


Backing Wire Tyler Fourdrinier Wire Corduroy Cloth

TANKS
of every description

We are equipped to build any sort of a wood tank for use in paper plants.

Let our engineering department assist you in solving your tank problems.



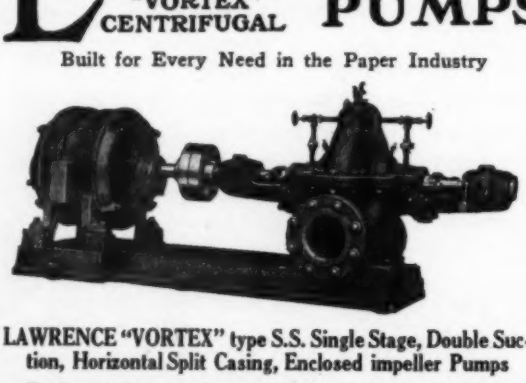
The A. T. Stearns Lumber Co.
NEPONSET, BOSTON, MASS.

EVERYTHING IN WOOD OR WOODWORK — 1849 —

STEARNS TANKS

LAWRENCE
"VORTEX" CENTRIFUGAL **PUMPS**

Built for Every Need in the Paper Industry



LAWRENCE "VORTEX" type S.S. Single Stage, Double Suction, Horizontal Split Casing, Enclosed impeller Pumps

Designed for maximum efficiency against moderate and high heads, and for operating at high speeds. Standard pumps are bronze fitted throughout. Internal hydraulic balancing device which automatically eliminates all end thrust. Oversize Ball Bearings mounted in dust and grease tight housings.

They are built for continuous service. Year in—year out.

Our Engineers are always ready to help you with pumping problems. Write for Bulletins.

Lawrence Pump & Engine Co.
P. O. BOX 70,
LAWRENCE, MASS.
New York Office:—90 West Street

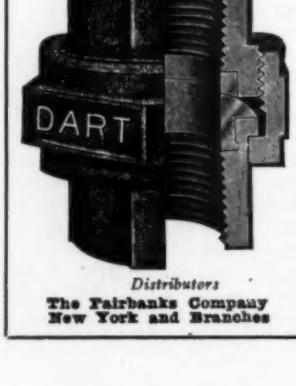
Standard Leak-proof Packing—Ebonite

The best way to prevent the trouble of replacing leaky gaskets is to pack with Ebonite Sheet Packing in the first place.

Its long life under high pressures and temperatures as well as on oil and acid lines, insures trouble-free service.

Send for sample.

QUAKER CITY RUBBER CO.
WISSINOMING, PHILADELPHIA
Branches: New York Chicago Pittsburgh San Francisco



Know the merits of the Dart Bronze to Bronze ground seat Unions

Try a free sample

Strength of Malleable Iron in combination with 2 Two Non corrosive seats of bronze

E. M. DART MFG. CO.
Providence, R. I.

Distributors
The Fairbanks Company
New York and Branches

Canadian Factory
Dart Union Co., Ltd.
Toronto, Canada.

outside layers and the center or backbone sheet, are two corrugated sheets. These also are designed to provide the maximum of dead air space.

The purchasing department of Carter Rice & Co., Corp., one of the largest New England paper merchants, has been placed in charge of W. J. McClellan, formerly in charge of coated blanks. Mr. McClellan will do all paper buying, but in selecting his papers he will be guided to a considerable extent by the advice of Mr. Ashley Crowell, who has been named head of the newly established merchandise department, which is to select and reject papers for the company.

For the first time in over a year, a cargo of pulpwood arrived at Boston. The vessel was the Schooner Quacco Queen and the 400 odd cords were consigned to the International Paper Co.

Grellet Collins and W. R. Ingersoll, president and sales manager of Dill & Collins of Philadelphia, were in Boston during a considerable portion of the past month in connection with adding another sales agent for their lines here, the Stone & Andrew Co., Inc.

Alfred Schwarz, of Berlin, A. Klein of N. V. Export Co., of Rotterdam, and Col. Edgar Smaller, of Edwin Butterworth Co., were three packers of paper mill supplies in Boston during the past month. All of them took the opportunity of calling on the New England mills while here.

Strathmore Paper Co. continue their policy of instructing the salesmen of merchants who distribute their papers, by inviting various members of such companies to visit them for a period and inspect the plant, view the manufacture of the paper and learn the features of the Company's business. The most recent instance of this was the visit paid by two members of Charles A. Esty Paper Co., to Mittineague; both young men spending several days at the plant.

I. C. C. Rate Decisions

The first victory in the salt cake rate case was won by the paper interests. The rate of 15.50 per 100 pounds, a commodity import tariff from Portland, Me., to the Advance Bag & Paper Co., at Howland was suspended by the Maine Central R. R. and the rate placed on a class basis. Through the New England Paper & Pulp Traffic Ass'n, this suspension was disputed, a suspension of the suspension ordered by the I. C. C., and now the old rate has been ordered continued indefinitely. Parallel with this case, although not directly connected with it, are complaints against the salt cake rates to Howland, Me., from Everett and Wilmington, Mass., and New York. The Advance Bag & Paper Co., utilizes the chemical in the production of sulphate pulp.

Other rate cases pending include a suspended advance on coal from all New England tidewater ports south of Portland, Me., to interior points. The New England Paper & Pulp Traffic Association and the Boston Chamber of Commerce are the leaders who are fighting the rates.

The commission has refused to cut the rates on macerated currency pulp to Windsor and South Manchester, Conn., and Newton Lower Falls, Mass., where it is used in making boards and sack papers. It is purchased from the Treasury Department at Washington.

Leonard Taylor, assistant superintendent of the Beebe & Holbrook division of the American Writing Paper Co., has been appointed superintendent to succeed his superior, Thomas Duff, who has resigned. Claude H. Smith has been promoted to the superintendency of the Nonotuck division of the same Company. He has been affiliated in the past with Crocker McElwain and Newton Falls Paper Co.

Rice, Barton & Fales Co., paper mill machinery manufacturers of Worcester, Mass., are exceedingly busy these

PERKINS HOLYOKE

Calender Rolls

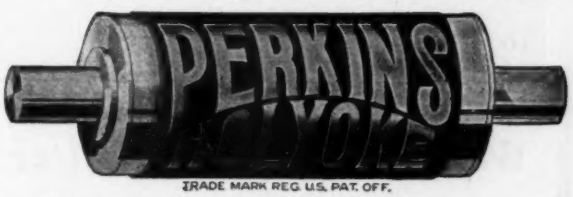
More than Fifty Years Successful Service

Since 1873, Perkins Calender Rolls have been known with favor to the paper industry. They have always had marked individuality because of special methods of manufacture that these long years of service in this field have developed.

Perkins Calender Rolls are uniform, resilient and resistent, essentials most important to the paper manufacturer. They are made with the proper density for your particular requirements. They stand heat better and wear longer.

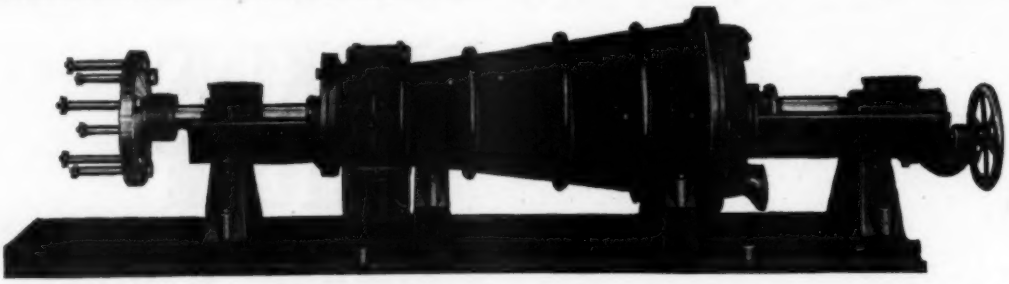
'No CALENDER can be better than the ROLLS in it'

B. F. Perkins & Son, Inc., Holyoke, Mass.



TRADE MARK REG. U.S. PAT. OFF.

COTTON ROLLS - PAPER ROLLS - EMBOSSING ROLLS - CHILLED IRON ROLLS - GRANITE PRESS ROLLS - WEB SUPERCALENDERS - GLASSINE SUPERCALENDERS - FRICTION CALENDERS EMBOSSING CALENDERS - SHEET CALENDERS - PLATERS - MULLEN PAPER TESTERS TENSILE TESTERS - VENTILATING FANS - RAG CUTTERS - STOCK CUTTERS - PAPER DAMPENERS BLEACH EJECTORS



EMERSON REFINERS

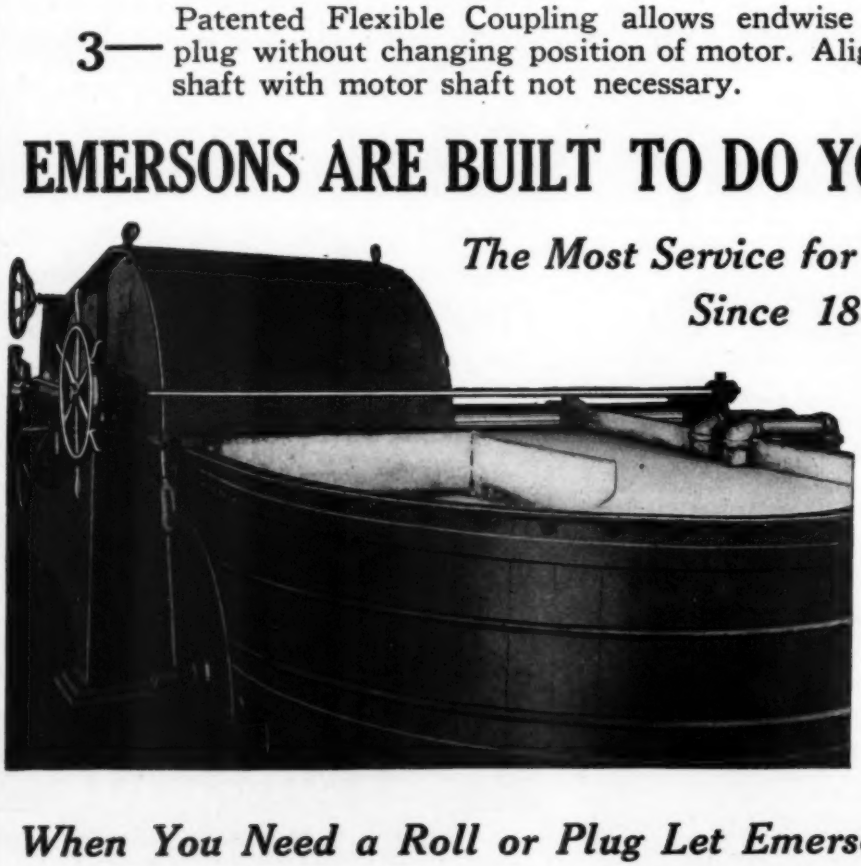
Some Special Features

1— Sliding Brass Gate, permitting removal of all foreign substances while refiner continues in operation.

2— Means of quickly maintaining alignment of plug and shell.

3— Patented Flexible Coupling allows endwise movement of plug without changing position of motor. Alignment of plug shaft with motor shaft not necessary.

EMERSONS ARE BUILT TO DO YOUR WORK



The Most Service for the Least Cost
Since 1888

Emerson Beaters

Used in connection with Emerson Refiners, results in perfect "team work" all through this most important stage of paper production. Emerson Beaters are built to care for your specific requirements.

When you have a roll or plug to build, get in touch with Emerson first for prompt quotation and quick service.

When You Need a Roll or Plug Let Emerson Quote You

EMERSON MFG. COMPANY, LAWRENCE, MASS.

days. They have a number of orders for fourdrinier machines, New England mills predominating in this respect. The Company is delivering for erection two 112-inch fourdrinier machines for making fine writing and ledger papers to the Whiting Paper Co., at Holyoke, Mass. These machines are being installed in the Lyman Mills addition, the textile plant that was purchased by Whiting last year. Othere are to follow.

A conference held at Portland, Me., recently was attended by representatives of several paper companies importing pulpwood throughout that port from the Provinces. The conference was initiated by shippers who desire to straighten out damage claimed by railroads to their rack cars in which pulpwood is shipped.

Four companies are importing pulpwood through Portland this year: International Paper Co., for Livermore Falls, Oxford Paper Co., S. D. Warren Co., and Hollingsworth & Whitney Co. The wood for the International and the Oxford is unloaded at the Porland Woodhandling Co., an International subsidiary, while the other two companies bring their wood through the old Bancroft & Martin plant at Ligonia near Portland. The Portland Woodhandling Co., discharges steamers from the Provinces at the rate of 100 cords per hour.

Parsons Paper Co., paid employees from $25 to $75 bonuses recently in celebration of its 75th anniversary. Employees over 5 years in service received the larger amount. An extra dividend was declared on the company's stock. It was a year ago that checks were paid out in memory of the 50th anniversary of Edward P. Bagg, Sr., president and treasurer.

President Willson of the American Writing Paper Co., discussed Germany and her economic conditions before the Holyoke Rotarians on his return from a tour of Europe recently. He visited many paper mills while abroad including the Aander mill at Heidelberg, the founder of which Mr. Zaner, had been an employe of the A. W. P. Co. some years ago.

Garret Schenck, founder and late president of the Great Northern Paper Co., left an estate inventoried at five million dollars. It included nearly 55,000 shares of Great Northern stock, besides holdings in New England railroads and public utilities. It is understood that his wife is the chief beneficiary. She also was bequeathed the residence in Weston, Mass.

Although reducing its lines in most directions, American Writing Paper Co., occasionally finds it expedient to add to them. During the past month it placed in the hands of specified distributors, Albion Laid a handsome new announcement line in colors.

The plan of paper box manufacturers in the Boston district to merge and form a new large corporation, in the course of which they would acquire contral of a paper board mill in New England, has been abandoned it is said. The plan was advanced by a Boston lawyer and entertained for a time, but its disadvantages when weighed against theoretical benefits were too great.

A sharp decline since early Spring in the stock of Great Northern Paper Co., meahs nothing, except perhaps, the snuffing out of some merger bubbles that had been floating around the exchanges. It was said that International Paper Co., was after Great Northern. This rumor and the known value and strong position of the company jumped the price to over 90 at one time, from which it slid to around 75 or 77. As a matter of fact, the rise was purely speculative and the present price is nearer normal.

W. H. Reeves, vice president and general manager of the Layne-Southeastern Co., St. Petersburg, Fla., is now associa-

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

Here's a test that will save you money

Send your next rolls to Butterworth for refill

Then see how long they last.

Rolls sent to Butterworth are refilled with finest quality Long Staple Cotton, if they are for coated stock; or with the very best paper obtainable, if they are used on super or glassine.

H. W. BUTTERWORTH & SONS CO.
Established 1820
Philadelphia
Plants at Philadelphia and Bethayres, Pa.

Canadian Representative:
W. J. Westaway Company
Hamilton, Ontario, Can.

Providence Office:
Turks Head Building

Southern Office:
1211 Johnston Bldg., Charlotte, N. C.

Butterworth Calender Rolls

What Continuous Causticizing Means to Soda and Sulphate Mills

1. Uniform liquor.
2. Less floor space
   (one-third saving over batch method.)
3. Minimum labor.
4. Reduction in alkali loss.
5. Lower steam consumption
   (75% saving over batch system.)

The Swenson-Mount line of Continuous Causticizing and lime recovery equipment is saving the pulp mills thousands of dollars each year. Our long experience in the design and operation of such equipment is at the service of anyone interested in lower manufacturing costs. Let us help you stop the losses.

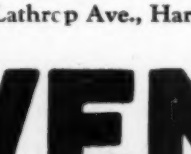
Send for descriptive bulletins.

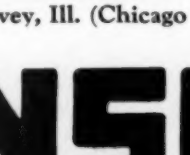
SWENSON EVAPORATOR COMPANY
(Subsidiary of Whiting Corporation)
15673 Lathrop Ave., Harvey, Ill. (Chicago Suburb)

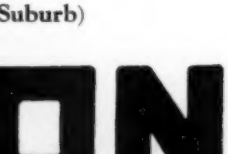
SWENSON

BASKET TYPE EVAPORATORS

VERTICAL TYPE EVAPORATORS


HORIZONTAL TUBE EVAPORATORS


ROTARY VACUUM FILTERS


CONTINUOUS CRYSTALLIZERS

YARYAN EVAPORATORS

ted with Layne & Bowler, Inc., in the Chicago, Ill. office. R. R. Schweitzer has succeeded Mr. Reeves, with his principal office at 212 S. A. L. Building, Norfolk, Va. The Florida office is under the charge of Y. C. Carmichael, at 4711 French Street, Jacksonville, the St. Petersburg office having been discontinued on June 15th.

WISCONSIN NEWS

Expansions Indicate Healthy Condition of Mills

New announcements of expansion and improvement give indication of the healthy and growing condition of the paper industry and allied concerns in Wisconsin. Additions, new equipment and changes have been frequent this year and are continuing in number.

Construction is in progress at the Northern Paper Mills, Green Bay, Wis., on a three story warehouse 112 by 299 feet in size. A new converting department is to occupy one floor and the other two will be used for storage. In all, there will be 100,000 feet of added floor space. Brick, steel and concrete are being used, and it is expected construction will be completed by January 1, 1929.

At the Falls Manufacturing Co., of Oconto Falls, Wis., a new beater room is being built and the digester and diffuser room enlarged. This concern is a subsidiary of the Continental Paper and Bag Mills Corporation. A new beater and three large steel diffusers are being put in place and are expected to increase the mill capacity by one-third. The diffusers were ordered from the Biggs Boiler Works, of Dayton, Ohio. In an attempt to produce cleaner pulp, the company has rebuilt the hemlock block conveyor in the woodroom and has relined digester No. 3. It is now possible to flush more water as the wood passes through, thus giving a better pulp. One other important improvement is the installation of a Morterud heater for the No. 5 digester so that steam will not be admitted directly. The liquor can be cooked without mixing in condensation from steam. When all departments resume production again, the company will be in much better shape to turn out a better quality of paper and in quantities that will take care of recent growth.

The need existing for several years for a new foundry at the Appleton Machine Co., Appleton, Wis., will be met by a new building costing $75,000 which is now in progress. Concrete, steel and brick will be used in the construction, and the foundry will cover a much larger floor space than the old one. Much faster production on a larger scale will be possible through the equipment the company is planning to install.

In order to replace a manufacturing unit destroyed by fire, the Menasha Printing and Carton Co., of Menasha, Wis., is erecting a one story building for its waxing department. The floor space will be 40 by 125 feet, and concrete is being used to make the structure fireproof. The contract has been awarded to C. R. Meyer and Sons Co.

Although no specific details are available, it is announced that the Nekoosa-Edwards Paper Co., of Port Edwards, Wis., soon will start enlarging its mill at Nekoosa, Wis. The purpose is to so equip the mill that production can be confined to kraft paper only at an increase of capacity from 125 to 140 tons daily. The bond issue of $3,500,000 announced recently provides for the retirement of previous bonds amounting to $1,400,000 and the remainder is to be used for new construction and equipment. Net earnings of the company have increased from $514,469 in 1923 to $1,173,808 in 1927, financial reports show. The average earnings annually for the last five years and five months were $738,250, and the total for the first five months of 1928 was $512,699.

Construction work is progressing rapidly on the new bleach plant of the Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis., preparatory to changing the mill over from newsprint to groundwood book paper. The new building will house three Fletcher beaters of the latest type, with all vats lined with white tile. An up-to-date clay system is to be installed so that the clay can be received in bulk form and conveyed from the cars directly to the bins. The mill

Foxboro Liquid Level Gauge

Know Your Water Levels Within 1-10 of an Inch

The job of watching water levels in some paper mills requires the almost constant attention of some employee. It is a tremendous waste of man power to devote manual supervision to a process that can be checked more accurately by an instrument.

A definite knowledge of water level conditions from the boiler to the supply tank is most important. Foxboro Liquid Level Gauges give you this knowledge. In the boiler room for example, a Foxboro Boiler Water Level Recorder tells the story continuously whether or not the boiler is making steam. There are already 20,000 Foxboro Instruments in use which apply the principles used in recording water levels. So accurate is this principle that a variation of 1/10 of an inch in level is easily recorded.

Foxboro Guarantee sealed to each Controlling and Recording Instrument

We suggest that you give us the opportunity to discuss with you the problems of water level records in your plant and to suggest how Foxboro has met similar problems in other mills.

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U.S.A.

NEW YORK · CHICAGO · BOSTON · PHILADELPHIA · DETROIT
PITTSBURGH · CLEVELAND · ROCHESTER, N. Y. · ATLANTA
PORTLAND, ORE. · TULSA · LOS ANGELES · SAN FRANCISCO
DALLAS

FOXBORO

REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

INSTRUMENTS FOR CONTROLLING, RECORDING AND INDICATING TEMPERATURE, FLOW, HUMIDITY AND PRESSURE.

This is a typical installation of Norwood Gravity Filters in a paper mill. Ask for a list of installations in your vicinity.

Facts about filtration!

GOOD judgment demands that you have all of the facts before you make a decision. When you make a filter installation, addition or change it is important that you have the facts. Isn't it logical that you should come to Norwood for facts about filtration when you consider their leadership and experience? Norwood makes more industrial filter installations than all others combined, has the largest filter manufacturing plant in the United States, and has the men, the knowledge and the experience to design and install a filtration system to adequately and efficiently meet your needs. We urge you to use our free engineering service. Ask our engineers for facts about filtration to meet your particular problems. Catalog on request.

Norwood also builds the following high grade paper mill machinery: Super Calenders, Glassine Calenders, Breaker Calenders, Sheet Calenders, Platers, Rag Thrashers, Folding Machines, Roller Suction Boxes.

Norwood Engineering Co., Florence, Mass.

NORWOOD

will be able to bleach and screen fifty tons of pulp a day for use in the finer grades of paper.

Improvements also are being made at the Consolidated's mill at Biron, Wis. Four new electric motors are being installed in the pulp grinding department. One 500 h. p. motor will be connected directly to each of the four pairs of smaller grinders, as auxiliary power to the 1100 h. p. water wheels at present driving those units. The motors are expected to absorb the fluctuations of load so that the speed of the machinery will be uniform. Greater production and a better quality of pulp are expected to be the result.

Concrete has been poured at the rate of 33 yards an hour at the Consolidated's new digester plant at Appleton, Wis., known as the Interlake Pulp and Paper Company. The walls, therefore, have taken rapid shape and means completion of the building in record time. Three of the digester shells have arrived, each weighing five and a half tons. Nine will be installed in the building when completed.

Experiment with Wood from New Zealand

Significant results have been obtained by the United States Forest Products Laboratory, Madison, Wis., in the production of print paper from New Zealand woods. It is highly probable that the experiments will give to the trade a successful process for the making of news print from American hard woods.

Experiments have been carried on for the last year, after the New Zealand government found it necessary to thin 100,000 acres of fast growing planted forests. Alex R. Entrican, engineer of that country's forest service, brought two carloads of logs to Wisconsin for the experiment. Several tons of newsprint and rotogravure papers were produced at the Great Western Paper Co., Ladysmith, Wis., and the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. The paper was run on the press of a daily newspaper at Madison, Wis., and the results found satisfactory.

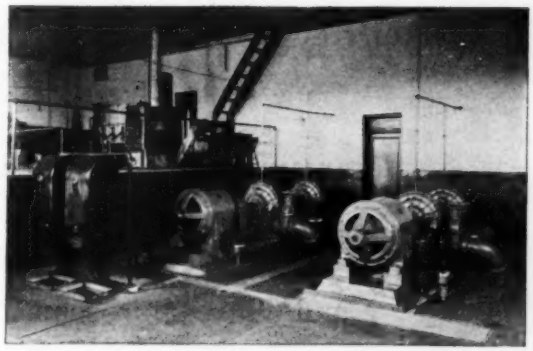
The newsprint was produced from mixtures of tawa groundwood (produced in a strictly mechanical manner on a pulpstone) and tawa sulphite (chemical) pulp with insignis pine sulphite. The usual ratio of groundwood to sulphite pulp (normally added to newsprint to give strength) in newsprint is about 3 to 1. Reversing this practice, the Forest Products Laboratory found that a highly satisfactory newsprint could be produced from a mixture of 50 per cent tawa sulphite, 35 per cent tawa groundwood, and 15 per cent insignis sulphite. Satisfactory kraft pulps were produced from the New Zealand pines and larch, and bleached pulps suitable for book paper, and similar products were produced from tawa by the soda and sulphite processes and from insignis by the sulphite process.

New Zealand buys newsprint from Canada and England, and it is conservatively believed that a mill established there could produce at a cost low enough to compete with Canadian pulp laid down in New Zealand ports, absorbing about 100 tons daily.

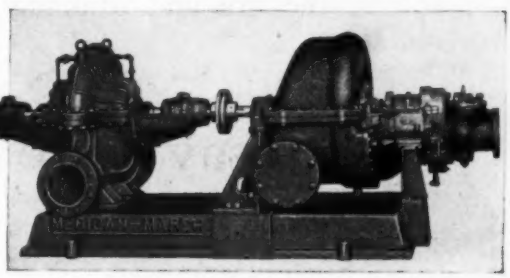
The Madison laboratory says in its report: "The production of newsprint from hard woods is of great significance in the United States. With spruce, the "old reliable" of newsprint, and hemlock nearing depletion in this country, with finished newsprint, pulp wood and pulp being imported in quantities, with the prospect of increasing rather than decreasing prices, and with the possibility of a Canadian embargo on unmanufactured pulp and pulpwood, diversification of any sort should not be unwelcome to newsprint users."

The delegation of approximately 200 members of the Technical Association of the Pulp and Paper Industry expected at the fall meeting at Wausau, Wis., Sept. 25, 26 and 27 will be entertained adequately. Five committees have been appointed by Allen Abrams, general chairman, and are busy on preparations. The committees are: Finance—D. C. Everest, N. S. Stone and J. P. Smith; general—Grover Keeth, C. A. Cajanus, M. M. Whitman, J. Richter Salveson, Warren Winn and W. H. Graebner; entertainment— E. M. Bassler, G. C. Howard, N. H. Foley and R. H. Kelly; ladies—Mrs. D. C. Everest, Mrs. H. A. Skinner, Mrs.. M. M. Whitman, Mrs. E.

AMERICAN-MARSH PUMPS



HBM Pumps arranged for two stage operation.



Capacities to 12,000 g.p.m.— low and medium high heads.

Improved Efficiencies

WITHOUT radical departures from sound accepted standards, American-Marsh engineers have added extra high efficiencies to this dependable line of HBM Single Stage, Split Case Centrifugal Pumps. Thus operating costs have been reduced substantially.

Before you next purchase pumps for boiler-feed, circulating, pressure boosting, or in fact for practically any type of clear water handling, by all means investigate this important American-Marsh development.

Our engineers can show you some very interesting economies. Write for new Bulletin 38, giving full details on the Improved Type HBM Centrifugal Pumps.

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN

AMERICAN-MARSH

HBM Centrifugal Pumps

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

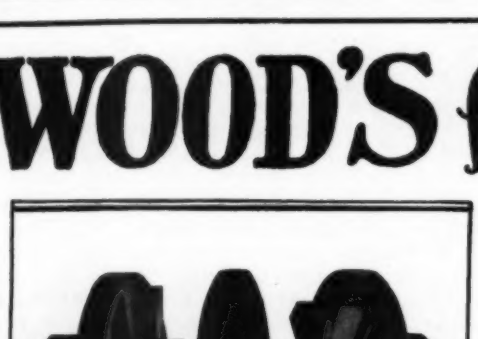
Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

WOOD'S flexible couplings



—form a perfect safeguard between the power and its goal by absorbing the destructive surges in a specially constructed leather disc, which provides flexibility in every direction.

Two cast iron flanges with lugs cast integral dovetail into holes in the leather disc forming a coupling that is as strong as solid steel, yet retaining the protective flexibility between direct connected motor and machine.

Always specify WOOD'S flexible couplings.

Wood's Power Transmission Machinery

Shafting	Pulleys
Hangers	Pillow Blocks
Couplings	Belt Contactors
Rope Drives	Speed Reducers
Friction Clutches	Conveyors
Flexible Couplings	Ball Bearings

DRIVE RIGHT

T. B. Wood Sons Co.

Chambersburg, Pa.

New England Branch: **Cambridge, Mass.**

Southern Branch: **Greenville, S. C.**

M. Bassler, Mrs. Grover Keeth, Mrs. G. C. Howard, Mrs. Allen Abrams, Mrs. H. H. Kelly and Mrs. Warren Winn; mill visitation—H. A. Skinner, C. H. Green and G. H. Urban.

Election of directors and officers by the Neenah Paper Company, of Neenah, Wis., recently, resulted in the choice of James C. Kimberly as president; D. K. Brown, first vice president and general manager; Kimberly Stuart, second vice president and secretary, and Leo O. Schubert, treasurer. Mr. Kimberly fills the vacany caused by the death recently of J. A. Kimberly, Sr. Other members of the board of directors are John A. Kimberly, Jr., and I. J. Stafford.

At the annual state convention of the electric section of the Wisconsin Utilities Association at Appleton, Wis., recently, A. R. Frahm, of the Northern States Power Co., of Eau Claire, Wis., was elected chairman. He succeeds Grant Ford, of the Wisconsin Valley Electric Co. of Wausau, Wis. D. G. Evans, of the Wisconsin Gas and Electric Co., Racine, Wis., was elected vice chairman.

Safety Conference Becomes Permanent Organization

The Fox River Valley Safety Conference, one of the most influential factors in industrial safety in Wisconsin, has become a permanent organization. It has survived several years of existence during which it emerged from the experimental stage into an annual project that the industries consider absolutely essential.

Leaders from various cities of the Fox River Valley met in conference recently at Appleton, Wis., to take steps necessary to make the organization perpetual. H. L. Vits, of Manitowoc, Wis., acted as chairman. A committee was formed among representatives of various industries, and this group will work out the final details. Among those appointed thus were: M. G. Hoyman, of the Kimberly-Clark Corp., Neenah, Wis.; William F. Ashe, of the Thilmany Pulp and Paper Co., Kaukauna, Wis.; W. J. Peacock, of the Northern Paper Mills, Green Bay, Wis.; H. G. Noyes, State director of pulp and papermaking, Wisconsin Vocational Schools.

In addresses made at the meeting, it was shown that attendance at the annual conferences amounted to 400 at the start, but now exceeds 1,000. R. C. Haven, of the National Safety Council, and R. A. McKeown, of the Wisconsin Industrial Commission, were present to assist in the plans.

May and June were perfect months so far as lack of accidents is concerned, at the large newsprint mill of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis. No lost time accidents occurred. On July 1st the employees had completed 100 safe days, breaking the previous record of 83 days.

Appleton's city government is enjoying the co-operation of the paper manufacturers in a city wide traffic safety compaign. Reaching out beyond the commendable work done in their own mills, they have helped to finance the placing of safety signs and newspaper advertisements covering full pages urging caution in the use of automobiles. The mills co-operating are: Interlake Pulp and Paper Co., Kimberly-Clark Corp., Fox River Paper Co., Appleton Coated Paper Co., Patten Paper Co., Thilmany Pulp and Paper Co., and Wisconsin-Michigan Power Co.

Suspension of a proposed schedule of freight rates on pulpwood shipped to Wisconsin from the west coast will be asked of the Interstate Commerce Commission by the Northern Hemlock and Hardwood Association. The organization met recently at Rhinelander, Wis., to consider the possible loss of its pulpwood business with Wisconsin paper mills. It is contended that plentiful supply of wood in the West would permit companies there to lay it down in Wisconsin at a lower price than Wisconsin and Upper Michigan Companies could sell it. A hearing is to be requested.

Sales conventions were held recently by the Menasha Print-

Here is a better way to grind calender rolls!

PAPER mill superintendents are finding Oakite Grinding Compound the ideal coolant and lubricant for grinding steel calender rolls. The remarkable efficiency of this material, even in localities where the water is hard, produces a roll that is free from blemishes of any kind, while it also eliminates the danger of rusting when rolls are left wet over night.

For washing felts, cleaning Fourdrinier wires, screen plates, and sieve cloths—Oakite materials possess outstanding merit. Their safe and efficient action assures thorough work, while in mills everywhere the life of felts is being appreciably prolonged through regular Oakite washing.

The economy of Oakite cleaning in the paper mill will interest you. Our Service Man will gladly call and give you all the details.

Simply drop us a post card today.

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

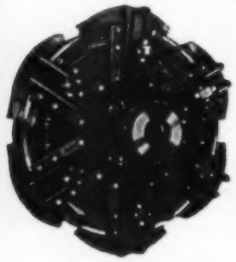
Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., Joplin, Mo., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., *Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Oshkosh, Wis., *Philadelphia, Phoenix, Ariz., *Pittsburgh, Pleasantville, N. Y., Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

Dependable — Positive Power Control



The dependable efficient operation of "Smith Type" Hill Friction Clutches is due to many exclusive features, including—positive action, no springs; greater H. P. per sq. in. of diameter; wearing parts easily accessible; centrifugal force compensated for by double jaw vise principle, etc.

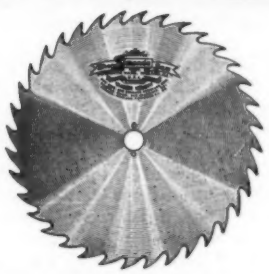
Sizes range from 9 to 1100 H. P. at 100 R. P. M.

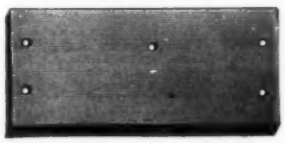
Write for details regarding the proper "Smith Type" Hill Clutch for your purpose . . . prime power units, individual machines, section of shafts group drives, etc.

The Hill CLUTCH
MACHINE & FOUNDRY CO.
6417 Breakwater Ave, Cleveland, Ohio.
POWER TRANSMITTING ENGINEERS

SIMONDS

Circular Saws and Machine Knives





For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.

Established 1832
Fitchburg, Mass.

Boston Chicago

BETTER SERVICE
on

Hard maple and gum wood press rolls
Brass tube rolls
Bronze couch and breast rolls
Brass, Iron and Wood felt rolls
Copper covered felt rolls
Brass covered felt rolls
White wood felt rolls
Iron cores for rubber covered press and felt rolls
Bronze suction box covers
Hercules car movers

All tube rolls balanced

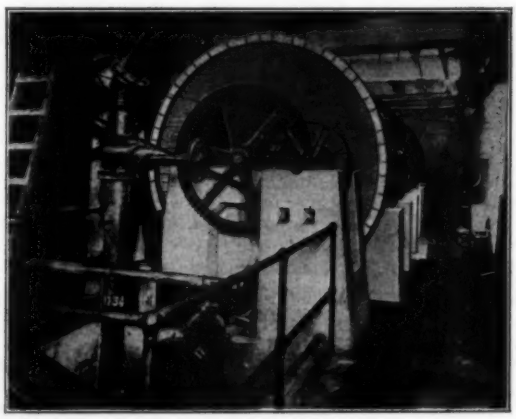
We would be very glad to submit information and quotations on all products. Just drop us a card.

J. W. Hewitt Machine Company
Paper Mill Machinery
Neenah Wisconsin

Lift Electrically

Why pull, tug, strain and waste your time with slow lifting methods, when the ROEPER TYPE "R" Electric Hoist will do the work twenty times as fast. The price is surprisingly low. Send for Bulletin.

Roeper Crane & Hoist Works, Inc.
1724 N. 10th St., Reading, Pa.



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

ing & Carton Company, of Menasha, Wis., and the Tuttle Press, Appleton, Wis. At the former, the delegation of fifty men was taken on special railroad cars to the mills at Ashland and Wausau, Wis., to learn production facts. They met afterward at Menasha to consider problems and future plans. The Tuttle force spent three days at Appleton in conferences and were entertained on the closing day at the company's annual picnic attended by 200 employees.

Some opposition is expected from the paper industry to the proposal of Dr. E. Stagg Whiten, of New York, that a paper mill be established in connection with the Wisconsin State Reformatory at Green Bay, Wis. Dr. Whiten is executive director of the national committee on prisons and prison labor. He proposed that convicts be used in reforestation work and that the products of their labor be absorbed in a paper mill. The Hawes-Cooper federal law probably will stand in the way of his plans, because it prohibits shipment of prison made goods from one state to another without plainly marking their source.

F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis., has been elected a director of the Minneapolis, St. Paul and Sault Ste. Marie railroad.

D. W. Bergstrom

D. W. Bergstrom, president of the Bergstrom Paper Company, of Neenah, Wis., died Sunday, July 29, following an illness of several weeks. He had served as president of the company since its organization in 1904 and was active in its management up to the time of his death. He was 77 years old. Mr. Bergstrom also was a director of the First National Bank, of Neenah, for 35 years. He was a leader in his community and an active church worker.

The survivors are his widow; four sons, John, Willis, Waldemar and Nathan, all of Neenah and a daughter, Mrs. Mary MacQuarrie, of Minneapolis, Minn.

Fund for Southern Forestry Education

A fund of $150,000 for the promotion of forestry education in the South has been raised by The American Forestry Association, Washington, D. C. The announcement was recently made by Ovid M. Butler, executive secretary of the association before state representative and foresters, at a special meeting at Atlanta, Ga., at which final plans for the conduct of the work were agreed upon. The campaign will be primarily to eradicate forest fires in Georgia, Florida and Mississippi, and will be conducted in close co-operation with the forest departments and the forestry and other educational agencies of the three states.

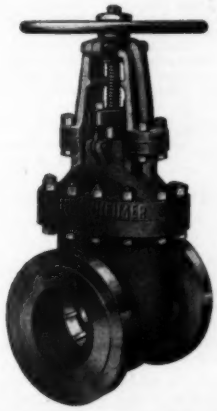
The project, eclipsing in scope and intensiveness anything ever before undertaken in the field of popular education, will extend over a period of three years and will be directed principally to the people inhabiting the forest regions of the three states. The funds were raised through contributions of various agencies and individuals within the three states, the Commonwealth Fund of New York, John D. Rockefeller, Jr., George D. Pratt, president of the association, and other public spirited men and women interested in the protection and perpetuation of the forest and wild life resources of the South.

American Schaeffer and Budenberg Sold

Manning, Maxwell and Moore, Inc., has purchased the business of the American Schaeffer and Budenberg Corporation, including good-will, trade names, trade-marks, patents, etc., and will merge that business with its subsidiary company, Consolidated Ashcroft Hancock Company, Inc.

Until further notice, all orders, correspondence, remittances, etc. for American Schaeffer and Budenberg Corporation should be addressed to Consolidated Ashcroft Hancock Company, Inc., American Schaeffer and Budenberg Division, 336 Berry Street, Brooklyn, N. Y.

Effective Insurance Against Wasteful Leakage



LUNKENHEIMER

Iron Body Bronze Mounted and All-Iron

GATE VALVES

are convincing a steadily increasing number of valve users that it pays to install high grade gate valves. On steam, liquid, oil and gas lines—where leakage is both expensive and hazardous—Lunkenheimer Gate Valves are being relied upon for the maximum degree of satisfactory low cost performance.

The wide range of patterns and sizes facilitates selection for any service condition and permits of economical standardization throughout the plant.

All-Iron Patterns are recommended for handling solutions which attack bronze but not iron.

Lunkenheimer Distributors, located in all industrial centers, can fill your requirements promptly.

Detailed information is contained in Gate Valve Book F-511. A copy will be sent upon request without obligation.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
SAN FRANCISCO NEW ORLEANS
LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

6-55A-67

FOR SALE

112" three-cylinder Pulp Machine. Six sets presses; 83 dryers, 48"x 108"; reel; re-winder; drives; counter shafts; shower pipes, etc. All complete. Reasonable price. Immediate delivery.

48—36"x84" Dryers, complete with double deck frames, gears, syphons, steam connections and everything. In A-1 condition, and for immediate delivery. Price reasonable.

Two Noble & Wood Mammoth Jordan Junior Engines, complete and in good condition.

One Ball Bearing Claflin Engine.

One 74" Seybold Holyoke Paper Cutter.

One 42" and one 62" Cameron Slitter and Rewinder.

Three Calender Stacks suitable for board—one seven and one nine roll, 116" face; one 13 roll 131" face.

GIBBS-BROWER COMPANY, INC.

Paper and Pulp Mill Brokers

261 Broadway, New York City
166 West Jackson St., Chicago, Illinois
1816 Engineers Bank Building, Cleveland, Ohio
Woodbury & Wheeler Co., Western Representatives
55 Second St., Portland, Oregon
OUR MOTTO—"Service First."

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

CLAY SALESMAN WANTED—Who has wide acquaintance among paper mills and can sell American and English China clays. State age, experience, salary expected and full information. Address Box 140, The Paper Industry.

Investigate
this Opportunity at
Longview, Washington

An unusual opportunity exists at Longview, Washington, on the Columbia River, for the operation of a combined sulphite pulp mill and hemlock sawmill—the mill to cut squares and dimension, supplying waste wood to the pulp mill.

A supply of hemlock logs sufficient to warrant the construction and operation of at least a 50-ton pulp mill is available and can be secured.

All other conditions are excellent:

(1) Sites on deep water; (2) Unlimited process water; (3) Cheap fuel for steam generation; (4) Terminal freight rates by rail and water; (5) High class labor; (6) Temperate, all-year round climate; (7) Pleasant living conditions.

For further information inquire:

The LONGVIEW COMPANY

Industrial Division

LONGVIEW WASHINGTON

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

WANTED—Mechanical Engineer with five years experience as Master Mechanic of pulp and paper mill or large chemical plant. Must have successfully handled crew of 150 men of various trades. Age between 35 and 40 years. Give salary expected, full details of experience and references in first letter. Address Box 138, The Paper Industry.

It Pays to Advertise

Opportunities in

this Opportunity Section

Paper Mill Machinery

FOR SALE

4—Vertical Digesters 15′ dia. x 50′ high

2—Barking Drums 9′ 6″ dia. x 30′ long

13—Baker & Shevlin Centrifugal Screens

10—Flat Sulphur Burners—Portland Co.

1—Sulphur Burner 48″ x 8′ Glen Falls

6—Bagley & Sewall Wet Machines

1—Pulp Drying Machine with 3 cylinders; 3 primary presses; 3 main presses; 83 dryers 48 x 108

FRANK H. DAVIS COMPANY
175 Richdale Avenue
CAMBRIDGE, MASS.

New Catalogues, Books and Publications

Bureau of Standards, Department of Commerce, Washington, D. C.—The Bureau announces that a new monthly periodical, the "Bureau of Standards Journal of Research" will continue the publication of the two series of research papers heretofore issued —"Scientific Papers" and "Technologic Papers". The new journal will contain the bureau's research papers and critical reviews in the fields of science and technology. These will be comparable in interest and importance with the bureau papers already issued. The union of pure and applied science in one journal it is believed will tend to bridge the gap between the two fields and shorten the lag between discovery and its application. The subscription price for the United States, Canada, Mexico or Cuba is $2.75; to other countries, $3.50.

Combustion Engineering Corporation, New York City—A new issue of The Safety Valve entitled "Burning Wood Refuse for Fuel", presents descriptions of boiler arrangements and certain types of furnaces for burning wood refuse fuel. A table is given showing the analyses and heating values of dry wood of different varieties. There are also figures showing typical furnace installations for burning wood refuse.

General Electric Co., Schenectady, N. Y.—Two new bulletins have been received. One, entitled "Arc Welding in Industry", illustrates the application of arc welding to groups of basic operations commonly found in industrial plants. The other, "Arc Welding in G-E Factories", shows how arc welding is used for different purposes in the company's plants.

Lewis-Shepard Company, Boston, Mass.—A very attractive catalogue of unique design has been received, giving complete information, specifications and illustrations of the line of material handling equipment which this company manufactures. The chapters in the catalogue are separated with index tabs in colors, and will be of special interest to any one investigating this equipment.

Lincoln Electric Co., Cleveland, O.—A bulletin entitled "Automatic Arc Welding by the Eletronic Tornado Process" describes the new method of welding in all its phases, including a treatise on the advantages of the use of the carbon electrode over the metallic electrode for automatic arc welding. The text deals with the greater strength, ductility and metal structures of the welds made by the new process. There is a description of the operation and a table showing the speed and costs of automatic arc welding of metal of different thicknesses for various joints. There are also illustrations showing the actual application of the process.

Link-Belt Company, Chicago, Ill.—The new "Built for Service" Crawler Crane Book No. 995 just issued by this company, is one of the most attractive and complete of its kind ever published. It covers the complete Link-Belt line of gasoline, diesel and electric crawler cranes of capacities up to and including the 2 cu. yd. heavy duty machine as well as standard locomotive cranes. There are many illustrations showing the use of cranes, data on lifting capacities, approximate operating speeds, line puil, tractive effort, etc.

Metropolitan Life Insurance Co., New York—"Getting Facts About Accidents" is the second of a series of publications on Industrial Safety, a thirty-four page booklet, just issued by the Policyholders Service Bureau of this company. The booklet outlines current industrial practice in obtaining and using accident facts as a means of promoting plant safety. It presents convincing evidence of the value of accurate knowledge concerning how and where accidents occur, on the part of those executives charged with the responsibility for keeping informed of the weak spots in the organization.

Superheater Company, New York City—Steam tables giving the properties of saturated and superheated steam from 0.0886 to 3300 pounds, absolute pressure, and which have been reprinted from the new seventh edition of the handbook "Superheat Engineering Data", have ben put out in convenient booklet form. Copies will be sent upon request.

Swenson Evaporator Co., Harvey, Ill.—Article II in the series of Bulletins on Heat Transfer and Crystallization by Prof. W. L. Badger has been received. This chapter deals with the basic principles of heat transfer.

Sullivan Machinery Company, Chicago, Ill.—Booklet 81-U describes this company's "K-3" Concrete Breaker, which is a powerful and substantial compression air tool for concrete breaking of the heaviest and most difficult kinds. The description is supplemented with illustrations of the breaker being used in different kinds of work.

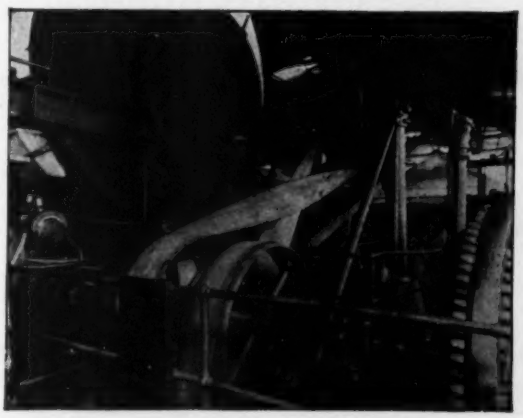
BOOK REVIEWS

An Important Book on Paper—A most elaborate two-volume treatise on paper has been issued by Holroyd-Reece from the sign of the Pegasus, Paris, bearing the title "Le Papier: Recherches et Notes pour servir à l'histoire du papier, principalement à Troyes et aux invirons depuis le quatorxième siècle". The author of the work is Louis LeClert, Conservateur honoraire du Musée de Troyes, who has devoted forty years of his life to the study of papermaking in France, especially of the paper mills in and about Troyes where paper has been made since the fourteenth century. As might be exected in a French treatise, considerable attention is given to the development of watermarks, and many of these are illustrated in the text besides reproductions in the paper itself. The volumes are printed on linen rag paper especially made for the work by the old mill of Canson et Montgolfier. Copies are available in New York from E. Weyhe, art bookseller, 794 Lexington Ave. Price $35.00.

The Papermakers' Directory of All Nations: The 1928 edition of this directory—the 37th annual issue—has just been published by Dean & Son, Ltd., London, Eng. This directory gives detailed particulars of the paper, pulp and board mills of the world, such as location, productions, machines, output, etc., also an alphabetical list of converters, merchants and agents. There are hundreds of trade advertisements, so that it is of great importance to any one connected with the industry, serving the double purpose of directory and buyers' guide. The volume is bound in cloth, contains 1080 pages, and sells for 20s. net.

Combustion Engineering Corp., 200 Madison Ave., New York City, announces the appointment of W. O. Renkin as manager of the industrial furnace department, effective August 1st. Mr. Renkin is well-known in the iron and steel industry, particularly as a pioneer in the application of pulverized fuel to metallurgical and industrial furnaces. He has devoted the past fifteen years to this particular field of engineering and brings a wealth of practical experience to his new position.

RHOADS TANNATE WATERSHED LEATHER BELTING



ON A CROSS-BELT CONE DRIVE
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Herbert Hoover Awarded Seaman Medal

The American Museum of Safety has awarded to Herbert Hoover the Major Surgeon Louis Livingston Seaman medal for 1927. This medal as expressed by its donor, Major Seaman is "for the best record in the saving of life in the field of sanitation and accidents." The award was made to Mr. Hoover in recognition of his great public services from the standpoint of human values, and particularly for his conspicuous work in the Mississippi flood relief.

In explaining the award to Mr. Hoover, and speaking on behalf of the American Museum of Safety and its committee of award, Arthur Williams, president of the Museum, stated that in awarding this medal to Mr. Hoover, the thought has been that the relief and construction work conducted under his direction during the war and post-war periods has been without precedent in the history of the world, not only in magnitude, but in effect as well. Mr. Hoover's activities and their results have produced encouraging recognition world-wide in scope, of the intrinsic importance of conserving human values. It will no doubt be generally admitted that there is in modern life an appreciation of this element of human value such as has never before existed and that this appreciation is of outstanding importance to the nation and to the whole world. Also, the committee of award had in mind that in addition to Mr. Hoover's construction relief work, important as it has been to the beneficiaries personally and as organized groups, there must be included those other elements of benefit to all mankind resulting from what may be termed the spiritual import of Mr. Hoover's activities.

The donor of the medal, Major Surgeon Louis Livingston Seaman, is a founder, charter member and trustee of the American Museum of Safety. Born in Newburg, N. Y. in 1851, a member of the first graduating class at Cornell University, he is the author of numerous books and papers, and for a number of years since 1881 has been a delegate to the international Medical Congress.

Gulf States Paper Corp. Buy E-Z Opener Bag Co.

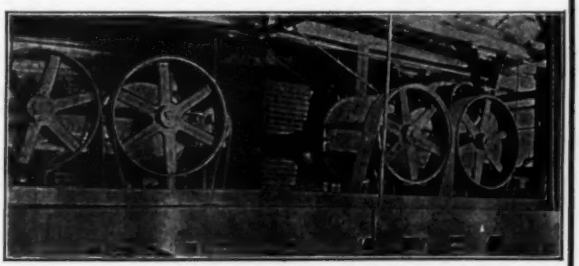
Announcement is made that the Gulf States Paper Corp. has acquired all the properties of the E-Z Opener Bag Company of Decatur, Ill. The mills taken over are: Decatur, Ill., bag factory, average production 35 tons per day; Orange, Tex., bag factory, 12 tons per day; New Orleans, La., bag factory, 30 tons per day; Braithwaite, La., sulphate pulp and kraft paper mill, 45 tons per 24-hour day.

In order to insure a supply of kraft paper for its bag factories, without being forced into the open market, as has been necessary in the past, and to meet the demand of its customers for wrapping paper, the company, after an exhaustive survey has acquired a site covering approximately 130 acres on the Warrior River at Tuscaloosa, Ala., where it is constructing and equipping a thoroughly modern sulphate pulp and kraft paper mill with a capacity of 100 tons of finished paper per day, or 30,000 tons per annum, which with the Braithwaite plant, will give the company an annual capacity of 43,500 tons.

W. F. Costello, who has been connected with the Bryant Paper Company, Kalamazoo, Mich., has succeeded D. E. Stowe as purchasing agent for the Eddy Paper Corporation, Three Rivers, Mich. Mr. Stowe's resignation became effective July 31, 1928.

Two Russian engineers and six workers recently sailed on the "Berengaria" after a five months' study of the Canadian and American paper industries, a large portion of this time having been spent in the Three Rivers and Gatineau mills of Canadian International Paper Co. Upon their return to the Soviet Union, all of these men will be employed in the $16,000,000 Volga paper mill, to be completed this year, which is the largest in the country and one of the most modern in Europe. A third engineer will remain on this continent for some time in connection with additional orders to be placed for paper mill equipment. The members of the delegation were particularly impressed with the systems of factory organization employed in the mills which they studied.

LEWELLEN Variable Speed TRANSMISSION



Two size 15, class "E" Lewellen variable speed transmissions, driving 102" Beloit Iron Works Cutter, at Western Board & Paper Co., Kalamazoo, Michigan. This machine is cutting sheets from 19" to 76" in length, at all machine speeds from 35 ft. to 200 ft. per minute.

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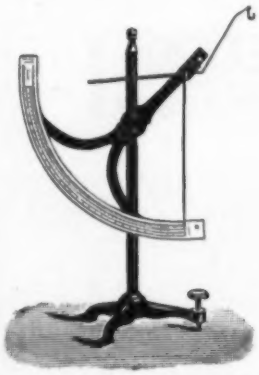

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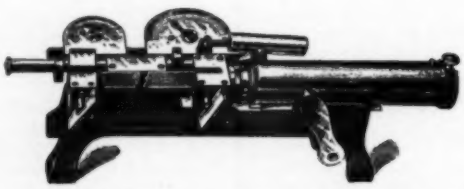
Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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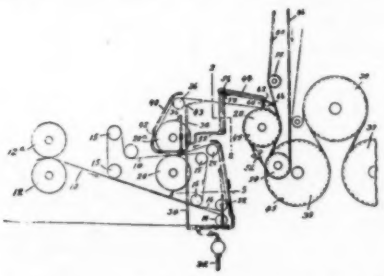
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Papermaking Machine

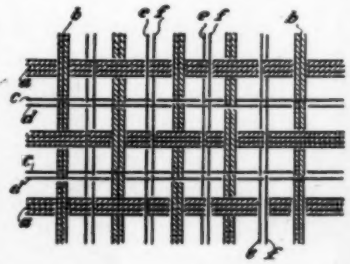
UNITED STATES Patent No. 1,670,305 is concerned with a method of guiding the paper web of a paper machine into the carrier ropes if the drying rolls which consist in directing the web to move toward the ropes and mainly at



one side of the ropes. The web is deflected in front of the ropes laterally toward the ropes by a blast of air directed onto the web in front of the ropes at an angle to the path of movement of it and towards the ropes. R. V. Weldon, Millinocket, Me., assignor, Great Northern Paper Co.

A New Weave for Dewatering Felt

IN THE new type of drying felt for use on the papermaking machine as well as on mechanical wood pulp and chemical pulp dehydrating machines, the filling and the warp of the felt are made of approximately equal thickness threads and are arranged in such a manner that they cross one another with the formation of intermediate spaces or meshes, which are traversed by finer warp or filling threads or both. This arrangement of threads in the drying felts serves to allow the water which is contained in the pulp and water mixture to pass through easily the intermediate spaces in the felt, without the condition of the felt being affected.



As may be seen from the accompanying illustration, which shows only the warp and filling threads which form the construction of the felt and the additional threads which are also employed in weaving the felt, the coarse warp and filling threads (a) and (b) form the ground of the felt, as is customary, which is woven with meshes of considerably larger size than is usual, or, in fact, that would be permissible. For example, distances of from seven to ten millimeters and more can be used in practical work, so that square meshes of from four to five and more millimeters side length are formed between the individual threads. The intermediate spaces are traversed by finer warp or filling threads, for example, (d) (c) or (e) (f), so that the larger mesh openings are filled up to a certain degree by these finer threads. These threads form a supporting structure for the main warp and filling threads which make up the structure of the felt, shown at (a) and (b).

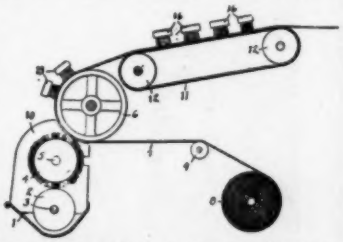
The felt which is constructed in this fashion is of high quality and possesses great strength, even when the water pressure behind it is great. Thus there is never danger that the papermaking machine or the pulp dehydrating presses will operate inefficiently due to a faulty felt. H. C. Waldhelm, German Patent No. 454,092.

Testing Paper While on the Papermaking Machine

THE variation in the plasticity or resistance to bending of paper, according as the degree of moisture present varies, is made use of in apparatus for indicating and recording the degree of moisture in paper in a semi-dry or nearly dry condition. The apparatus is applied to the paper between the press rolls on the papermaking machine and the drying cylinders. It consists of grooved rollers, the ridges of one roller being placed opposite the grooves of the other, so that the rollers move towards and away from each other as the moisture content varies. The bottom roller is rigidly mounted while the top roller is mounted on an arm which is pivoted and connected at its extension to the toothed segment of an indicator. The bottom roller may be dispensed with, the top roller then co-operating with a drying roller which is grooved for this purpose. T. Kalle, Saffle, Sweden. British Patent No. 288,598.

Paper Coating Machine

A NUMBER of coating pans, shown at (1) in the accompanying illustration, are arranged end to end. Feed rollers (3) are also arranged end to end in operative relation to the pans. Coating brushes (5) are similarly arranged end to end in operative connection with the feed rollers. There is a partition wall between the feed rollers and the coating brushes. A paper drum (6) is operatively connected with the coating brushes. An apron is arranged in the rear of this drum. Scrubber and finishing brushes (13) operate in connection with this drum and apron. A series of other brushes are also provided to help in obtaining a properly coated paper surface. These brushes may be reciprocated longitudinally, the spaces between the ends of the brushes being greater than the stroke of the paper to which the coating is applied by one of the coating brushes. United States Patent No. 1,675,066. C. O. Thorne, Watervliet, Mich.



Determining Dry Content of Mechanical Wood Pulp

THE portion of the pulp from which the test sample is taken must be at least two per cent by weight of the total weight of mass in the batch. A sample is thus taken from every 33,000 pounds of wet pulp. Various methods of taking the sample for determination of the dry content are described.

The test sample should weigh approximately 4.5 pounds and should be divided into four parts, each weighing a little over a pound. One of the four samples serves for the first test and the others are used for checking the results obtained in the analysis if this is necessary.

The sample is dried in a suitable apparatus at a temperature of 100 to 105 degrees C., until a constant weight is at-

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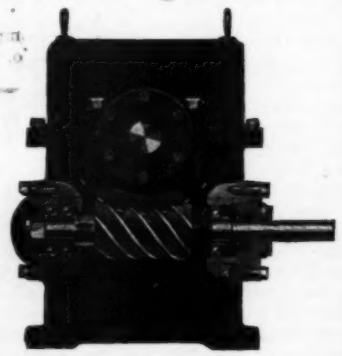

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tained. This point is assumed to equivalent to variation in the weight of the sample amounting to less than 0.1 per cent. When the sample is taken out of the drying chamber for weighing, then a period of at least thirty minutes must elapse between these two weighings. When the weighing is carried out within the drying apparatus, then a period of fifteen minutes must elapse between the two weighings.

It is recommended that the sample be weighed within drying chambers, for this is the only sure way of determining the absolute dry fibre content of the pulp. Zellstoff und Papier, 1928, number 5, pages 297-8.

Strong and Light Colored Mechanical Wood Pulp

THE simplest and most economical process of producing a light colored mechanical wood pulp is to steam the ground wood for approximately four to five hours at a temperature

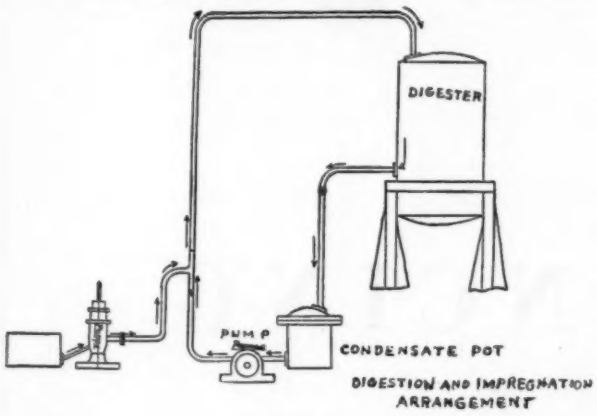


Figure 1

of 120 to 125 degrees C. Very small amounts of mineral acids, salts or sulphuric acid are vaporized in the steaming chamber or in the steam pipe which leads to it. The proportion of acid to steam is from one to three parts per ten thousand. However, when the wood emerges from the steaming apparatus, although it may be quite colorless, nevertheless, quickly becomes yellowish when exposed to the action of air. Hence the wood is cooled off in the digester while air is prevented from entering as far as is possible.

Tests are also made with sodium bisulphite liquor and also with sulphur dioxide gas. Thus, one experiment consisted in the preliminary treatment of the wood with sulphur dioxide, that is, after impregnation of the wood in the cold or warm state with sulphur dioxide.

Impregnation of the wood is acco[illegible]lished in a process which is patented in French Patent N[illegible]'5,403 and which is

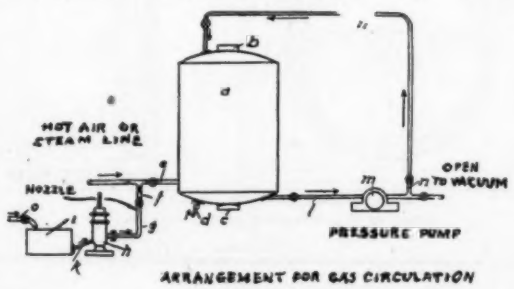


Figure 2

shown in the accompanying illustrations, Figs. 1 and 2. The impregnation of the wood is accomplished after thorough evacuation, pressure of approximately eight to ten atmospheres being applied to the wood either in the hot or cold state. The liquor is compressed above in the vessel and then the liquor is allowed to run down into a reservoir through the condensate pot. Fresh liquor is allowed to enter the reservoir, which is required for complete impregnation. A safety valve is inserted on the runoff pipe, and this valve assures the pressure within the apparatus being maintained at a constant point. The reservoir can be heated and thus hot fresh liquor is pumped into the digester. This is recommended for many purposes where contact with the air is not desirable. When the latter is necessary, then the impregnating fluid can be

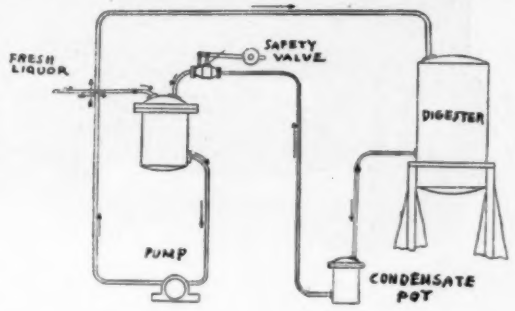


Figure 3

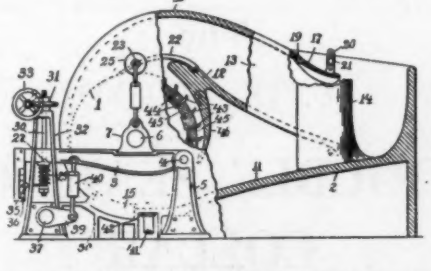
pumped by a suitable compression pump through the pressure pipe of the circulating pump (see figure 1). The liquid thus circulates in a continuous flow and the liquor which is taken up by the wood is replaced by fresh liquor of still higher density.

Experiments were made with the use of artificial pressure in cooking chemical pulps. It was established that considerable quantities of liquor could be saved when the wood is first impregnated by a process which is carried out in the apparatus shown in Fig. 3. The liquor which is used for this purpose is run off and reused and then the wood can be digested to a finish with weaker liquor and under hydraulic pressure.

The original article contains considerable details on the theory of the process, on the composition of the liquor and the like. Leopold Enge, Papierfabrikant, volume 26, pages 1 to 3.

Beater

THE beater consists of a tub (11), a beater roll (1) and a back fall (12) which is higher than the topmost point of the beater roll. An upwardly curved deflector (22) is pivoted

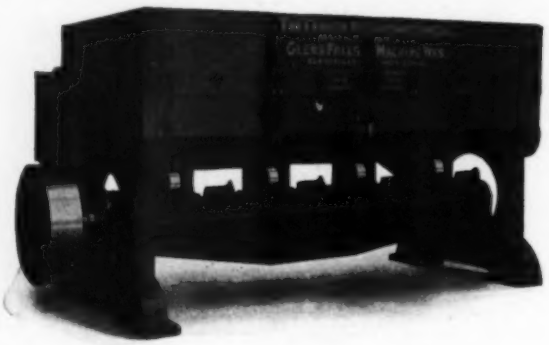


at one end to the back-fall. Its free end is thus presented close to and above the beater roll. L. Shlick, Boston, Mass. United States Patent No. 1,675,385.

Differences in the Properties of Paper Using Moist and Dry Pulp

PAPERS, which are manufactured in one case from dry pulp and in another case from wet pulp (sulphite cellulose in both instances), possess basically different properties. In fact, so marked are the differences in the characteristics of these papers that it may be though that they are made from essentially different sorts of chemical pulp. The strength characteristics of the papers are particularly affected and the use of the dry sulphite pulp has a very unfavorable effect on these properties.

The loss of strength is composed of a partial adherence and shrinkage of the fibres, which takes place even when the greatest care is taken to carry out the drying process under the best possible conditions, and also of localized overheating



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Patented

ROLLER SHOE FLAT SCREEN

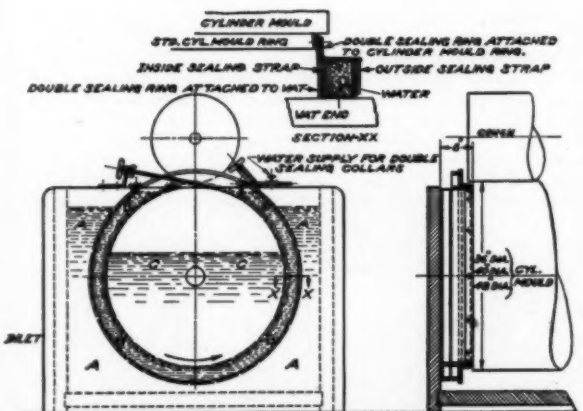
ANNOUNCING

The

A. D. WOOD

DOUBLE SEALING COLLAR

(Patent Applied For)



"WOOD" DOUBLE SEALING COLLARS
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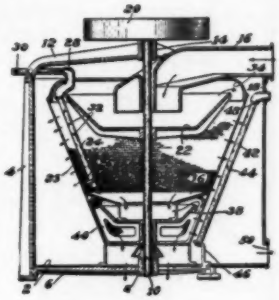
Portland, Ore.

See pages 342 and 343 in the 1927 Paper and Pulp Mill Catalogue

of the paper web as it passes over the drying cylinders in the papermaking machine. The paper will later disintegrate at the spots at which overheating occurred. The once dried fibre possess only a very slight swelling or hydrating capacity, the beating takes longer, and in order to attain a certain degree of beating, more time has to be spent by the pulp in the beater, than when the pulp is introduced in the moist condition into the latter apparatus. W. Schmidt, Zentralblatt fuer die Papierindustrie, volume 45, pages 319ff.

Screen for Paper Making

THE illustration shows a type of screen for papermaking in which the screen (25) is adapted to be rotated about an axis. Means are provided for distributing the stock within the inside of the screen near one end. A shower (42) is adapted to clear clogged apertures of the screen. Means are provided for collecting the unscreened material and for distributing it about the inside of a screening section, whereby the material is subjected to a second screening operation. The screened stock and the tailings are separately conducted away from the screen. I. I. Laird, South Walpole, Mass., assignor, Bird Machine Co. United States Patent No. 1,675,612.



Phenomena in Winding Paper Web on Rolls

THIS is a rather abstract and highly theoretical discussion of the various phenomena that take place when the paper web is rolled up on rolls. It is shown that this process, which is on the face of it a very simple operation, one that has been used for a long time in the papermaking industry, is surrounded with all sorts of special conditions which affect the results. H. Muelwert, Der Papierfabrikant, May 6, 1928, pages 285 to 287.

The Use of Starch in Papermaking

A VERY comprehensive study has been made of the use of starch in papermaking and the results have been published in an article by Dr. Hans Wrede in Der Papierfabrikant, May 13, 1928, pages 301 to 309. The article is divided into three parts, the first being concerned with the present status of starch as a papermaking material, the second with

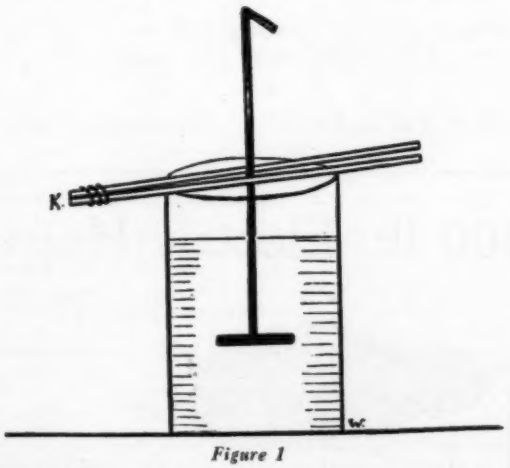


Figure 1

the methods employed for cooking the starch so as to obtain a mass which is in the proper condition for use in the papermaking process and the third consisting of a detailed description of the various ways in which starch is employed in the manufacture of paper.

It is necessary to test starch to determine whether or not its properties make it suitable for papermaking purposes. Thus, nine grams of the air-dried starch are stirred up beforehand with approximately ten cubic centimeters of distilled cold water, and then made into a paste in the quickest possible manner with 180 cubic centimeters of boiling distilled water. Then, after a paste has been obtained, the latter is mixed with enough hot water until the total weight of the paste is exactly equal to two hundred grams.

The paste is then introduced into the apparatus, shown in Fig. 1. A sinker is allowed to hang in the paste, as may be seen from the figure, and it is held in a particular position by means of a clamp. The paste is allowed to stand and it is completely solidified within a period of twenty-four hours. Then the sinker is drawn out of the mass. The force that is required to draw out this sinker is an indication of the stickiness—that is, the adhering power of the starch. The surface of the starch paste is covered with a thin oil film in order to prevent the formation of a hard crust, which would materially affect the results.

In making a large number of starch tests, it is necessary to have some easy way of determining the force required to remove the sinker. The apparatus shown in Fig. 2 is used for this purpose. The water is measured out from a hundred cubic centimeter burette into a tared flask until the weight of the water and the flask is sufficient to draw the sinker out of the congealed paste. The number of cubic centimeters of water then gives the force required to remove the sinker figured in grams. The results of this test are given in tabulations in the original article.

The properties of various starches are examined. Thus one of the most important of these properties from the standpoint

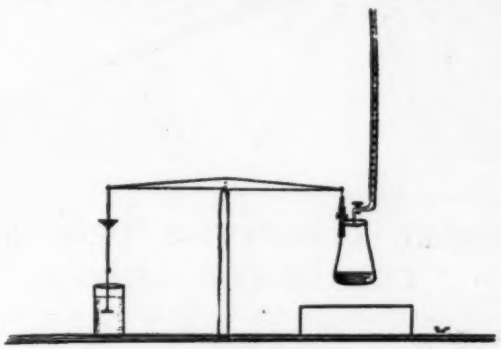


Figure 2

of the use of the starch in the papermaking process is its behavior in the formation of a paste. The following tabulation contains some valuable information on this particular point.

Kind of starch	Beginning of swelling	Beginning of paste formation	Temperature of complete paste formation
Potato	46.2 deg. C.	58.7 deg. C.	62.5 deg. C.
Corn	50	55	62.5
Wheat	50	65	67.5
Rice	53.7	58.7	61.2

The various ways in which starch is employed in the papermaking process are described. In the manufacture of writing paper, the starch is added in the raw condition or converted into paste with the aid of alkali. Rice starch is most suitable for this purpose when used in the raw state, for its particles are smallest size but its comparatively high price has not made it popular. The next best starch is corn starch, whose particles are seen to be much smaller under the microscope than potato starch. The use of starch converted into a paste with the aid of alkali is not recommended for the better grades of writing paper for the reason that the sizing quality of the paper always suffers due to the absence of free rosin. This process has been used in the manufacture of printing papers but the use of sodium silicate is recommended in the place of alkali, for the sodium silicate will convert the starch into a paste without the necessity of heating it.

Starch is also added to the beater after being thoroughly heated and thus converted into a paste. Wheat starch is

Steam can't back up through this valve

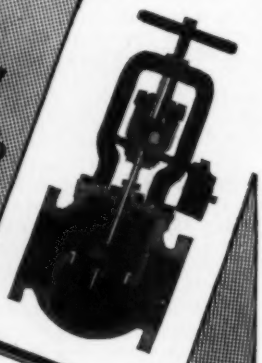


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Fig. 296
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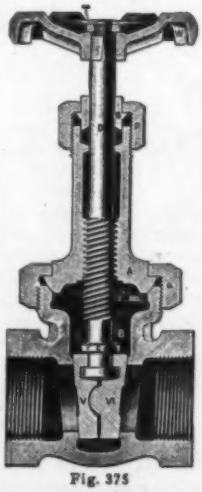

Fig. 375

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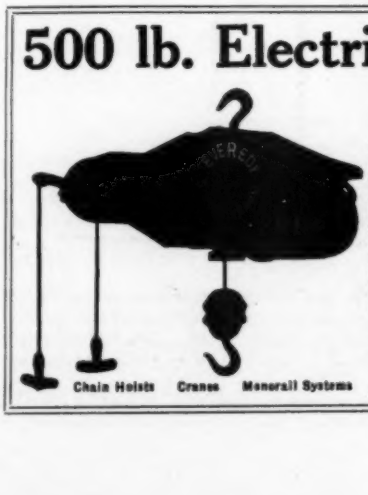

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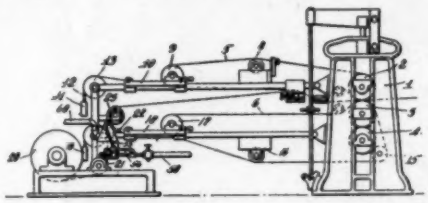
most readily absorbed by the paper fibres. Starch is also treated with special preparations which convert it into pastes without destroying some of its most favorable properties. Starch is also used in combination with rosin size, and also with montan wax.

The use of starch in the beater in the manufacture of printing paper is also described. Starch converted into a paste by heating, by the use of alkali, in combination with water glass, etc., is used for this purpose. The use of starch in making silk paper, parchment paper and similar special papers is also described.

Finishing Paper

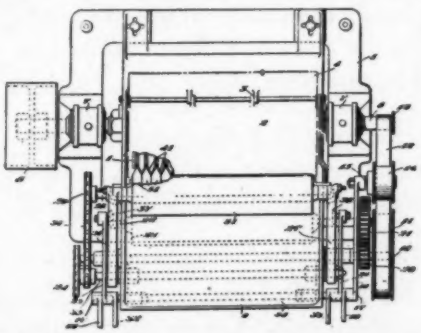
THE apparatus, which is shown in the accompanying illustration and which is patented in United States Patent No. 1,674,848, assigned to the Eastern Manufacturing Co., Boston,



Mass., is employed in finishing paper. The method consists in moistening the surface of comparatively dry paper and then immediately thereafter subjecting it to heavy pressure between finishing rolls. The moistening portion of the machine is shown at the left while the finishing rolls are indicated at (1), (2), and (3).

Paper Pulp Shredder

THE removable knife in the paper pulp shredder has a blunt end bounded by three rectangularly arranged edges and two principal divergent cutting edges adjoining the blunt end. The rotary drum of the paper pulp shredded is shown at (2) in the accompanying figure. This drum has a number of projecting knives (41) and also a number of relatively stationary knives which can be readily removed from the drum and which can also be adjusted while on the drum. These knives are located in such a manner that portions of the



knives of the drum pass between portions of the stationary knives when the drum rotates. The adjusting means for the stationary knives is arranged in such a manner that some of the knives may be adjusted differently from the contiguous knives. Thus the machine is adapted to shred the paper pulp into zigzag strips of any desired length. F. B. Philbrick, Waterville, Me., assignor, Waterville Iron Works, Watterville, Me. United States Patent No. 1,676,048.

Determining Sizing Quality of Paper

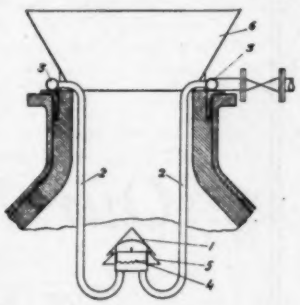
THE sizing quality of unsized and slightly sized paper (newspaper) is tested. The Herzberg "stroke" test is used in combination with the examination of the streak that is formed on the paper under the microscope ten to twenty magnified. An ocular micrometer is employed to determine the degree of the bleeding of the ink mark, that is, at certain distances over the lead pencil mark drawn over the ink mark (distances of two, three or five millimeters). The lead pencil marks facilitate the exact measurement of the ink that flows out of the ink mark over the width of the streak which is accurately drawn by means of a drawing pen.

The results obtained in this manner agree very well with one another. Thus, well-sized paper will show under these conditions not an inappreciable blotting of the ink mark. In all these tests, in which the ink does not penetrate through the paper to any marked degree (the thicker sorts of paper), the magnitude of the blotting effect may be considered to be a direct measure of the sizing quality of the paper. On the other hand, in thin papers the blotting or bleeding effect is greater than for the same kind of paper in greater thickness. This entails a certain error in the method.

The tests should not be made with a wide streak being drawn on the paper that is being tested, for, then, the ink penetrates through only to an inappreciable degree. The blotting or bleeding, which is figured in percentage on the test, is variable for different widths of the streak. Nevertheless, if the absolute magnitude of the bleeding is determined, then values are obtained with various widths of streaks, which do not differ from one another to such a degree as to invalidate the results of the analysis. E. Oeman, Svensk. Papp, tidn., volume 20, pages 591ff.

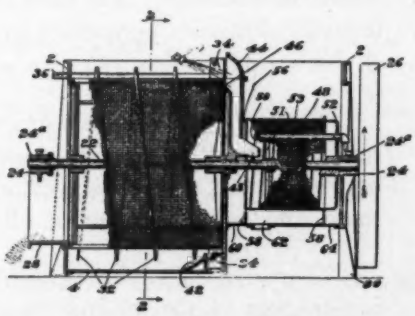
Conical Wood Distributor for Chemical Pulp Boilers

THE conical wood distributor, which is for use on digesters making chemical pulp and which is patented by E. Castren and E. Oksa, Esno, Suomi-Finland in United States Patent No. 1,675,211, consists of a conical part (1) which is suspended by means of the tubes (2) in the inlet of a pulp boiler. The charging hopper is shown at (6). Fluid pressure is admitted to the cone (1) through the hollow pipe (2). The purpose of this is to assist in distributing the flow of the charge of chips uniformly in the digester.



Screen for Papermaking

THIS apparatus, as shown in the accompanying illustration, is provided with a vat (2) in which there rotates a rotary screen of the inflow type (46). A spirally arranged member (32) is carried by the screen on its exterior. This serves to urge the coarser particles of the stock along the outside of the screen and lengthwise of the vat. A series of perforated



members are provided on the exterior of the screening drum which are adapted to elevate and discharge the coarser particles into a second screening drum (48). I. L. Laird, South Walpole, Mass., assignor, Bird Machine Co. United States Patent No. 1,675,613.

In a news item in the July issue of THE PAPER INDUSTRY entitled "Paper Companies Use High Pressure Boilers," reference was made to 650 lbs. pressure boilers for the West Virginia Pulp and Paper Co. This should have read for the Waldorf Paper Products Co.

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Erie, Pennsylvania

New York, August 1, 1928.

THE paper market is feeling the effects of the customary midsummer slowing down of business and probably is quieter at present than has been witnessed at any time thus far this year. Demand is of rather narrow limits as consumers, converters and jobbers alike and in general are confining their buying to actually required supplies, with the result that most of the orders reaching the market call for comparatively small amounts of paper. However, everything considered, it is likely that the industry is encountering relatively better activity this summer than ordinarily is noted at this season. It is observed that demand is developing quite regularly, which would seem to mean that buyers are finding it necessary to acquire supplies fairly consistently owing to their stocks being at a minimum level. Also, in an aggregate sense, it is probable that demand is of larger volume than usually at this period of the year; at any rate, some branches of the industry are managing to keep moderately well engaged, and the market in spots is exhibiting good activity.

No one in the industry is the least concerned in an apprehensive way over the prevailing situation. Paper manufacturers and merchants have grown to become accustomed to the midsummer lull in business, and it is likely that they would be more surprised if it didn't develop than they are now that the situation smacks of that generally experienced at this time of the year. Optimism is running high as regards the market out-look, nearly everyone within the trade looking forward to excellent business in paper of all classes as soon as the summer is past. In fact, it can be stated that there are places in the industry where the improvement already has set in, and there seems every reason to believe that the quickening of demand will gain momentum and will touch the high spots in the autumn.

There is, of course, some selling pressure being exerted on the market at the moment. This is more or less to be expected under prevailing market circumstances. There are instances where this or that manufacturer is shading prices in an effort to corral as many orders a posible; there have been other cases where a reduction in quotations on a certain class of paper has been made generally by practically all the mills making such paper. At the same time, no drastic recessions have been effected in prices of paper, other than in one or two exceptions. Manufacturers apparently are endeavoring to keep production somewhere within the scope of the ruling demand, and thereby are helping to maintain market levels fairly well. One very salient reason for this is that paper prices have been moved down to levels so close to the actual cost of manufacture that mills cannot afford to reduce any further if they hope to realize any profit at all.

Production of paper of all grades in the United States showed an appreciable increase in May as compared with the preceding month, totaling 617,783 net tons, as contrasted with 580,374 tons produced in April, according to the monthly summary compiled and issued by the American Paper and Pulp Association. On the other hand, the total daily average production in May was about one per cent less than in April, but 8 per cent greater than in May, 1927. The increase in the total May output over April, despite the lower daily average production was the result of a larger number of working days in May. Mill stocks of paper of all kinds at the end of May amounted to 289,573 net tons, against 271,480 tons a month earlier, representing an increase of about 7 per cent. Shipments from mills during May aggregated 599,438 tons, contrasted with 567,994 tons in the preceding month. The production of paper in the first five months of this year amounted to 2,923,640 tons, against 2,826,559 tons in the corresponding period of 1927, showing a material gain this year over a year ago.

Newsprint production declined in June as compared with May. United States and Canadian mills produced a total of 312,064 tons of print paper in June, and shipped out 307,837 tons, against 329,821 tons produced and 326,376 tons shipped in May, according to the News Print Service Bureau. Production in the United States was 119,673 tons and shipments 116,901 tons in June, while the Canadian mills made 192,391 tons and shipped out 190,936 tons in the same month. During June, 18,835 tons of newsprint were produced in Newfoundland and 1,430 tons in Mexico, so that the total North American output for the month amounted to 332,329 tons. The Canadian mills produced 166,904 tons more in the first six months of this year than in 1927, which was an increase of 17 per cent. The United States mills made 56,243 tons, or 7 per cent, less than in the first six months of last year. Production in Newfoundland was 12,992 tons, or 13 per cent, greater, and in Mexico 115 tons more, making a total North American increase of 123,768 tons, or 7 per cent, over the first six months of 1927. During June the Canadian mills operated at 79.2 per cent of rated capacity and the United States mills at 83 per cent. Stocks of newsprint at Canadian mills at the end of June were 47,937 tons, and at United States mills 39,979 tons, making a combined total of 87,916 tons, which was equivalent to 5.9 days' average production.

May production of paper board in the United States reached a total of 241,919 tons, showing an appreciable gain over the 221,046 tons produced in the preceding month, according to the monthly statistical summary of the board industry compiled by the United States Department of Commerce, which shows that the 91 firms operating 118 plants reporting to the Department operated at 96.9 per cent of capacity in May, as contrasted with 92 per cent in April and 83.4 per cent in May, 1927. New orders received by manufacturers in May called for a total of 224,220 tons of board, against 211,237 tons in the preceding month, and unfilled orders held by mills at the end of May were for 73,157 tons, compared with 84,513 tons a month earlier. Shipments of board from mills during May aggregated 235,648 tons, contrasted with 220,248 tons in April, while stocks of board at mills at the end of May amounted to 48,906 tons, against 40,312 tons a month previously.

No further downtrend in quotations on newsprint has been reported. Evidently, contract rates have steadied at the slightly lower level noted a month or so ago, and a movement of more or less official character is afoot in Canada to stabilize the market and forestall any additional decline in prices. The price tone in kraft paper also has steadied. It is stated that mills which put into effect a fairly sharp cut in prices recently have since notified the trade that higher prices can be expected, and therefore it is believed that the low levels ruling lately will not remain for long. Fine papers are moving as well as could be looked for at this period of the year, and prices are holding their own quotably, with manufacturers exerting every effort to keep from creating a supply surplus in the market. Book paper has quieted to a rather pronounced degree, due in large part to a falling away of the transient demand, and principal activity in the market at present involves the movement of supplies into contract channels. Prices are somewhat soft though no notable recessions have been noted. Tissues are seasonably slow and are rather easy in price. Building papers are wanted in decidedly good volume for this time of the year, and mills making roofing and sheathing paper are reported working at a good rate of capacity. Demand for box boards is commencing to broaden following a dull spell, and reports say that activity in the board market is increasing daily. Board quotations are steady to firm, and display an upward tendency.

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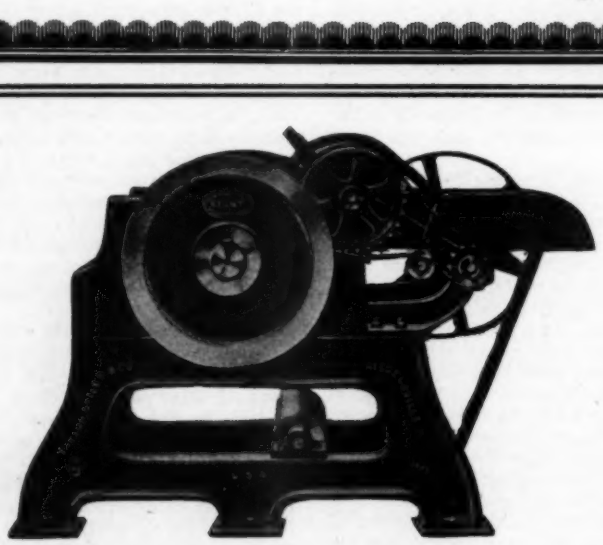

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Papermaking Rags

The midsummer season is the time of the year when demand for rags from paper mills usually is at its lowest ebb, and the market at present is about as it ordinarily is at this period. There is little call for supplies other than against urgent requirements, and while consumers are purchasing some classes of rags in fair volume and in a more or less regular manner, it can hardly be said that the market is exhibiting other than normal activity. As would be expected, prices in most cases are in favor of buyers, by which is meant that paper manufacturers in a majority of instances are acquiring supplies at slight concessions from the prices generally asked, or at least at the low edge of the quotational ranges issued.

Doubtless the feature of the market is the pronounced firmness in the lowest grades of papermaking rags or roofing stock. Demand for such rags is keeping up remarkably well; so well, in fact, that the market appears well sold up, with little or no sizable accumulation of stock in dealers' hands, thus creating a firm price condition. Prices of some grades of roofing have actually strengthened a bit, due to roofing manufacturers finding it necessary to grant slightly higher figures than previously to secure the amount of rags wanted. No. 1 domestic roofing stock or cloth strippings has been sold at 1.95 cents a pound f. o. b. shipping points, and No. 2 domestic stock at 1.55 cents at dealers' points. These probably represent the top prices mills have granted, but on the other hand it is acknowledged that purchases no longer are easy to accomplish at lower levels. Foreign dark cottons are bringing 1.65 and 1.70 cents a pound ex dock New York, and foreign linsey garments up around 1.85 cents.

The firmness in roofiing rag prices can be attributed to several causes. One is that more of these rags are being consumed in European countries, with the result that dealers there have fewer to export to America, and, moreover, prices abroad have been just a little above a parity with our market levels here, which has discouraged importers in the United States from bringing in usual tonnage, thereby making for a smaller available supply of foreign roofing stock. Feltmakers are concentrating their buying on domestic grades, and this has helped to stiffen prices in this country, and also has kept the market fairly clear of domestic supplies. Dealers are quite bullish concerning roofing grades, and assert that higher market prices are in prospect, particularly if mills continue to buy in the same volume that has marked their operations in recent months.

Old white cottons are in routine demand only, and little or no change is observed in quoted prices. Perhaps buyers are securing some lots at shaded figures, but No. 1 repacked whites are quoted around 6 cents a pound f. o. b. shipping points for good-quality packing, and No. 2 repacked whites at 2.50 to 3 cents per pound. Repacked thirds and blues are selling at 2.35 cents a pound on an average, depending on the quality of packing, at dealers' shipping points, and miscellaneous blues at around 1.85 cents. Market rates on old cotton batting have eased off to where purchases are reported possible down to 4 cents a pound f. o. b. shipping centers.

The movement currently of new cutting is slow at best. Paper mills are engaging in spotty buying as their needs dictate, and sellers apparently are not pressing matters while realizing that fine paper manufacturers are not busy at present and are in no frame of mind to acquire raw material. Prices of those grades favored with demand are maintained, whereas other descriptions display a sagging tendency. It is reported that No. 1 white shirt cuttings are available at 11 cents a pound, and perhaps at a shade less, f. o. b. shipping points, while unbleached cuttings are quoted at 10 cents, blue overall cuttings at 6.75 cents, light silesias at 7.25 cents, washables at 4.25 cents, and bleached canton flannels at 9.25 cents. Very little activity is noted in foreign rags, other than roofing grades, and prices are quite irregular and uncertain.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	10.75-11.25
White shirt cuttings, No. 2	6.50- 7.50
Fancy shirt cuttings	5.25- 5.50
Washables, No. 1	4.25- 4.50
Unbleached muslin	10.00-10.25
White lawns	9.25- 9.50
Overall cuttings, blue	6.75- 7.00
Black silesias	4.50- 4.75
Light flannelettes	8.00- 8.25
Canton flannels, bleached	9.25- 9.50
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	8.25- 8.50
Shoe cuttings, unbleached	6.50- 6.75
Light silesias	7.25- 7.50
O. D. khaki cuttings	5.50- 5.75
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.25- 3.50
Linens, No. 1, white foreign	13.00-14.00
Light prints foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.15- 2.35
Black stockings	4.10- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.00- 4.50
Roofing, No. 1 (cloth strippings)	1.90- 2.00
Roofing, No. 2	1.50- 1.60
Linsey, garments, foreign	1.85- 1.90
Dark colored cottons, foreign	1.65- 1.70
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

An excellent demand exists for old rope, and it would seem as if paper mills are purchasing this raw material in better volume than they usually do at this time of the year. Either this, or the fact that there is less old rope of strictly prime quality reaching the market, is making for a firm tone in prices, and old manila rope is one material consumed in the manufacture of paper which is exhibiting a decided tendency to advance. Dealers report sales of No. 1 domestic old manila rope at 3.62½ and 3.75 cents a pound f. o. b. shipping points, and it is said that it is becoming increasingly difficult to buy below 3.75 cents because sellers are hesitating about accepting orders at less. Foreign old rope is fetching 3.25 cents and slightly higher ex dock New York or other American Atlantic ports, and also is in good demand. Mixed strings are relatively quiet and are quoted at 90 cents per hundred pounds upwards at dealers' shipping points.

Scrap bagging is in fair demand, and prices rule steady. Indications are that paper manufacturers are absorbing practically all the supply offered, and the market appears in a strong technical position. No. 1 scrap is bringing 1.65 cents or thereabouts f. o. b. shipping points, and roofing bagging

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SUPERIOR CHEMICALS

TRADE MARK

CHEMICALS AND SERVICE

PRODUCTS

ROSIN SIZE

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VEGETABLE TALLOW

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The Most Extensive Organization of Its Kind in the World

Producing, Distributing and Servicing Chemical Products for the Pulp, Paper and Coating Trades

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ENGLISH AND DOMESTIC CLAYS

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CASEIN SOLVENTS

SOFTENERS

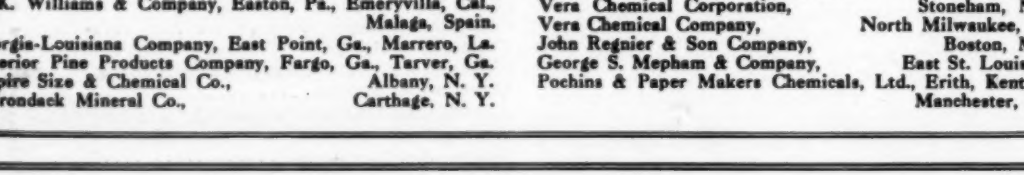
DRY AND PULP COLORS

TURKEY RED OIL

Paper Makers Chemical Co., Easton, Pa., Holyoke, Mass.
Western Paper Makers Chemical Co., Kalamazoo, Mich., Pensacola, Fla., Jacksonville, Fla., Savannah, Ga., Comstock, Mich.
C. K. Williams & Company, Easton, Pa., Emeryville, Cal., Malaga, Spain.
Georgia-Louisiana Company, East Point, Ga., Marrero, La.
Superior Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
Adirondack Mineral Co., Carthage, N. Y.
Superior Sizing Company, Lockport, N. Y.
Paper Makers Importing Co., Easton, Pa., St. Austell, Cornwall, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ontario
Vera Chemical Corporation, Stoneham, Mass.
Vera Chemical Company, North Milwaukee, Wis.
John Regnier & Son Company, Boston, Mass.
George S. Mepham & Company, East St. Louis, Ill.
Pochins & Paper Makers Chemicals, Ltd., Erith, Kent and Manchester, Eng.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry



If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

1.30 and 1.35 cents per pound. Gunny bagging is quiet, and relatively low in price.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.65 -1.80
Gunny, No. 1 foreign	1.55 -1.65
Scrap bagging, No. 1	1.60 -1.70
Roofing bagging	1.25 -1.35
Wool tares, heavy	2.25 -2.50
Wool tares, light	2.00 -2.25
Manila rope, No. 1 foreign	3.25 -3.50
Manila rope, No. 1 domestic	3.62½-3.75
Sisal strings	1.50 -1.75
Mixed strings	.90 -1.10

Old Paper

The outstanding development in the old paper market is the sharp decline that has occurred in prices of old books and magazines. Market rates on this grade of stock have dropped fully $10 per ton during the last month, due to consuming mills having filled their requirements for a time and withdrawing from the market as buyers. Where sales of No. 1 heavy book stock were recorded a month or so ago up to 1.90 cents a pound f. o. b. shipping points, the present market is down to about 1.40 cents at accumulating centers and it is possible that some purchases have been made lately even under this level.

Shavings also display a declining price trend, and it is reported that No. 1 hard white are available at 2.70 cents a pound f. o. b. shipping points, and soft white shavings at 2.20 cents. However, better prices than these are being paid for desirable packing, as, for example, one-cut soft shavings are said to be fetching up around 2.50 cents a pound. Old kraft is in fairly good call and is quoted at 1.85 cents f. o. b. eastern shipping points for strictly No. 1 quality packing. Ledgers have eased in price to where some packings are to be had at as low as 1.40 cents a pound at dealers' points. No. 1 mixed paper is moving freely at 45 cents per hundred pounds f. o. b. New York, and at well above this price in the Middle West, while folded news is quoted from 55 cents upwards, old corrugated boxes at 65 cents upwards, and common mixed paper at 35 cents upwards.

The market condition is rather typical of the midsummer season, with some grades wanted in fair tonnage and other more or less neglected. In other words, paper and board mills are buying as their requirements necessitate.

The following are quotations named by dealers f. o. b shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.70-3.00
Hard white shavings, No. 2	2.70-2.75
Soft white shavings	2.20-2.50
Colored shavings	1.00-1.25
Heavy book, No. 1	1.35-1.50
Crumpled book, No. 1	1.15-1.25
Ledger stock	1.40-1.65
Kraft, No. 1	1.80-1.90
New kraft cuttings	2.50-2.75
Manilas, No. 1	.75- .85
White blank news	1.40-1.50
Overissue news, No. 1	.65- .75
Folded news	.55- .70
Sulphite mill wrappings	.70- .80
Old corrugated boxes	.65- .75
New corrugated box cuttings	.80- .90
Mixed paper, No. 1	.45- .60
Common paper	.35- .40

Pulpwood

The pulpwood market is reported dull, with such buying as is being done of strictly routine character and scope. Prices quoted on Canadian wood in the Watertown, N. Y., district range from $18.50 to $19 per cord for four-foot peeled wood, $21.50 to $23 a cord for rossed wood, and $19.50 to $20.50 a cord for hand-shaved wood.

Exports of pulpwood from Canada in June, 1928, amounted

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QUALITY FIRST
For the Coloring of Bond Papers
If you are confronted with two-sidedness we especially recommend
FAST BOND YELLOW N T G G
FAST BOND ORANGE N T G R
FAST BOND SCARLET N T R R
FAST BOND GREEN N T G G
FAST BOND BLUE N T G B
FAST BOND BLUE N T B B
EXCELLENT FASTNESS TO LIGHT

NEKAL B EXTRA
An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

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"Excelsior" Felts
For EVERY GRADE of PULP & PAPER
We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*
Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.
KNOX WOOLEN COMPANY
CAMDEN, MAINE
Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
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Sulphur

A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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Cut your cost of Production
Improve your Quality
Increase your Profits
by
The use of Efficient Equipment
for

1. Woodpreparing
2. Acidmaking
3. Cooking
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6. Drying

We cover the whole field

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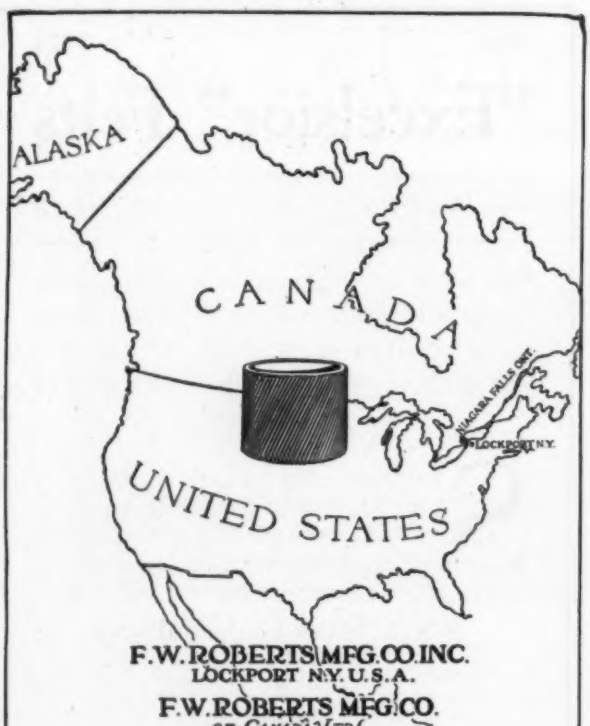
Sole Representatives
For: Paper Machinery, Ltd.
Montreal, Quebec



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RUSS GELATIN CO.
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ANIMAL SIZING GLUE STOCK
LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING
E. F. RUSS COMPANY 327 Atlantic Avenue BOSTON, U. S. A.

to 136,507 cords, valued at $1,444,442, all of which came to the United States, comparing with 71,008 cords of a value of $711,165 exported in the preceding month, and 159,183 cords of a value of $1,745,716 in the corresponding month last year.

Mechanical Pulp

The market for mechanical wood pulp is in a listless condition, and demand is developing very slowly. Consumers as a general thing manifest surprisingly little interest, evidently having their needs well taken care of and not caring to augment their supplies at present, and the price tone is easy decidedly with the level of market values anything but favorable to producers of the commodity. It is stated on excellent authority that strictly prime ground wood, freshly ground, is available in Canada down to $21 per ton f. o. b. pulp mills. Possibly this is a bottom price but it is declared that purchases have been effected in some instances at this low, despite the fact that Canadian manufacturers have grown discouraged over the unprofitable position of market values and have in numerous cases stopped grinding. Domestic ground wood is around $25 a ton f. o. b. grinding mills, while imported ground wood of Scandinavian origin is quoted at $31 per short ton ex dock American Atlantic ports.

Production of ground wood in the United States in May amounted to 101,568 net tons, showing an increase from the 97,426 tons produced in the preceding month, according to the American Paper and Pulp Association. Mill stocks at the end of May last totaled 121,145 tons, compared with 113,063 tons a month earlier, which would indicate that the larger output during May went almost entirely into stock.

Chemical Pulp

The demand for domestic chemical wood pulp is fair, and market prices are holding their own without showing any change of consequence. Most of the current movement into consuming channels is against contracts and back orders, as buyers are not operating in the market at present except in cases where they discover they need additional tonnage of pulp, yet it would appear as if producers are managing to dispose of the bulk of their output and that, in the aggregate, there is a moderately large movement into consumption. Steadiness in foreign pulp rates helps to sustain prices of domestic pulps, and there is no perceptible selling pressure being exerted on buyers, probably owing to the market being fairly cleared of accumulations.

The most desirable grades of bleached sulphite are quoted at 3.75 to 4 cents per pound f. o. b. pulp mills, with quotations on extra qualities ranging up to 4.75 cents. No. 1 strong unbleached sulphite is reported fetching 2.50 to 2.75 cents a pound at pulp plants, depending on the grade, while No. 1 book sulphite is steady at 2.75 to 3 cents a pound at shipping points. Bleached soda pulp is quoted at 3 to 3.25 cents a pound, and No. 1 domestic kraft pulp at 2.75 to 3 cents f. o. b. pulp mills.

United States mills produced a total of 125,617 net tons of chemical wood pulp in May, contrasted with 119,271 tons produced in the preceding month, according to statistics compiled by the American Paper and Pulp Association. Mill stocks at the end of May last amounted to 24,332 tons of all grades of chemical pulp, against 25,587 tons a month earlier.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

Most pulp and papermaking chemicals are moving regularly against contracts, and exhibit a steady price tone although current demand is rather quiet. Casein prices have stiffened slightly to where domestic casein is quoted at 16.50 cents a pound to a little higher, with the imported product

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SODA ASH

CAUSTIC SODA

LIQUID CHLORINE

Contract or Spot Delivery

In tank cars and multiple unit cars.

Write for Prices

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

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Uncle Jake says—

"I once knew a man who attracted so much attention to himself by continually shouting, 'I'm honest,' that they finally insisted he pay his pew rent a year in advance."

A man is always known by what he does. He may or he may not live up to what he says. When we made

KVP PAPERS

we did something that we would like an opportunity to prove to you was an outstanding paper achievement.

Samples sent upon request.

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

WE ARE INTERESTED IN BUYING OR SELLING

Niagara Alkali Company Preferred
St. Croix Paper Company Rights
Robt. Gair Company New Common
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St. Lawrence Paper Mills
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Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
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Manufacturers of

Coated Book and Coated Lithograph Papers

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Books—	
No. 1 S. & S. C.	5.75- 8.00
Machine finished	5.50- 8.00
English finished	5.50- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.00-15.00
Newsprint—	
Rolls, contract	3.00- 3.25
Rolls, transient	3.25- 3.50
Sheets	3.50- 3.75
Side runs	2.90- 3.15
Cover stock—	
Coated, both sides	-10.25
Coated, one side	-10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.75- .90
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	5.50- 6.00
No. 2 kraft	4.25- 4.75
Southern kraft	3.75- 4.00
Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	52.50-57.50
Plain chip	40.00-42.50
White coated chip	50.00-55.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemicals

(*Continued from page* 905)

priced at around 17 cents. Soda ash and caustic soda quotations are maintained. Rosin is quoted at 9.85 to 9.95 cents a pound for the grade of gum rosin used by paper mills.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	3.50 - 3.75
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty aid)	16.50 -17.50
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, Grade E	9.85 - 9.95
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	4.22 - ....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities and we will endeavor to furnish actual markets.

Bonds	Bid	Asked
Abitibi Fibre Company 6s 1947	104	
Abitibi Power & Paper Co. 5s, 1953	OW	BW
Abitibi Power & Paper Co. 6s, 1940	105	106
American Sales Book Co. 6s, 1939	102½	104
Advance Bag & Paper Co. 7s, 1943	99	
Bastrop Pulp & Paper Co. 6½s, 1940	104½	
Beaver Products 7½s	109	111
Beaver Board Co. 8s, 1933	102	103
Bedford Pulp & Paper Co. 6½s, 1942	99	101
Belgo Canadian Paper Co. 6s, 1943	103	105
British Columbia Pulp & Paper Co. 6s, 1950	91	93
Brompton Pulp & Paper Co. 6s, 1935	103	
Brompton Pulp & Paper Co. 6s, 1946	104	
Brown Company 5½s, 1946	102	
Brush Moore Paper Co. 6½s, 1937	97	98½
Bryant Paper Co. 6s, 1942	100	101
Celotex Co. 6s, 1936	OW	100
Celotex Co. 6½s, 1939	99	101
Canada Paper Board Co. 7s, 1937	96½	98½
Central Paper Co. 6½s, 1941	86	89
Central Paper Co. 6s, 1933	86	89
Central Paper Co. 7s, 1932	87	92
Champion Fibre Co. 6s, 1941	101½	103
Champion Paper Co. 6s, 1945	95	98
Champion Coated Paper Company 6s	102½	
Columbia River Paper Mills 6s	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp Co. 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	95	97
Donnacona Paper Co. 6s, 1948	98	100
Eastern Manufacturing Co. 7s, 1938	99	99½
Escanaba Paper Co. 6s 1939	98	100
Escanaba Paper Co. 5s, 1928	99	101
Filer Fibre Co. 7s, 1937	93	
Fort William Paper Co. 6s, 1946	101	102
Fitchburg Paper Co. 5s, 1929	99	
Glatfelter Paper Co. 6s, 1938	104	106
Hammermill Paper Co. 6s, 1939	101½	
Hartje Paper Co. 6s	1	
Hawley Pulp & Paper Co. 6s, 1946	100	
Hoberg Paper & Fibre Co. 7s, 1937	94	96
Industrial Fibre Co. 8s	100	102
Itasca Paper Co. 6s	99	
Itasca Paper & Prairie River 5½s	100¼	
Jessup & Moore Co. 6s, 1945	85	88½
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Manitoba Paper Co. 6½s	103	105
Mead Fibre Co. 7s, 1937	100	
Munising Paper Co. 6s, 1936	98	
Marathon Paper Mills 5½s, 1942	99	
Marinette & Menominee Paper 7½s, 1936	102	104
Mead Pulp & Paper Co. 5s	95½	
Mengal Co. 7s, 1934	103	105
Mengal Co. 7s, 1933	101	
Minnesota & Ontario Paper Co. 6s	98	100
Missisquoi Pulp & Paper Co. 7s, 1929	99	
Missisquoi Pulp & Paper Co. 6s, 1945	98½	
Monroe Paper Products 7½s	97	99
Murray Bay Paper Co. 6½s	103½	
Oswego Falls Paper 6s, 1941	100	103
Orono Pulp & Paper Co. 6s, 1943	102	
Orono Pulp & Paper Co. 6s, 1941	97	
Parker Young Co. 6½s, 1944	98	100
Paper & Textile Machinery Co. 7s	100	103
Paterson Parchment Paper Co. 6s, 1938	101¾	103
Peerless Paper Co. 6s	98	100
Penobscot Chemical & Fibre Co. 6s, 1942	102	105
Queen City Paper Co. 7s	97½	99
Riordan Pulp & Paper 6s, 1942	102	
River Raisin Paper Co. 6s, 1936	98	101
Rolland Paper Co. 6s, 1937	99	101
St. Regis Paper Co. 6½s, 1931	99	101
St. Regis Paper Co. 6s, 1931	100	101
St. Ann Paper Co. 6½s, 1953	103	105
St. Croix Paper Co. 5s, 1928	99	
St. Helena Pulp & Paper 6s, 1941	99	
St. Lawrence Pulp & Lumber 6s, 1933	6	8
Spruce Falls Power & Paper Co. 5½s	98	100
Stevens & Thompson Paper Co. 6s, 1942	95	97
Spanish River Pulp & Paper 6s, 1931	108	
Southern Advance Bag & Paper 6s, 1947	97	

(*Continued on page* 915)

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BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
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Dealers in
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Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
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Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.

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SELLING AGENTS
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Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

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The B Co. QUALITY PULPS

HAFSLUND NORWAY — "HAFSLUND BEAR" Bleached Sulphite

F:HAGA — "FORSHAGA" Bleached Sulphite

KRAFT HURUM — "HURUM SPECIAL" Extra Strong Kraft

NORWAY SPECIAL

KOOS BAC — "BAMBLE" Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
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200 FIFTH AVENUE NEW YORK, N. Y.

ELIXMAN PAPER CORE CO., INC.

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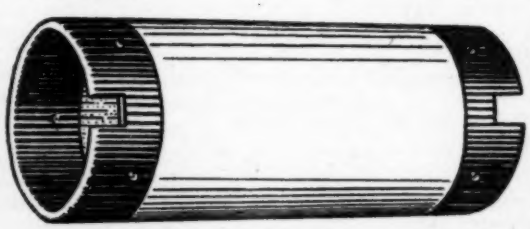

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93.38% Efficiency in
Official Holyoke Test
A Record-breaking Performance
Means More Power
from the Same Water

Water sealed oil lubricated casings

Also Dependable Canal Equipment
"From Dam to Tail-race"
Request Catalog

RODNEY HUNT MACHINE CO., 38 River St., Orange, Mass.

EXPORTS

In point of value, the United States exported more paper in May, 1928, than in the preceding month, and also more than in the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. May exports aggregated in value $2,500,192, compared with $2,395,854 in April of this year, and $2,159,740 in May, 1927, these figures covering exportations of all kinds of paper from this country. Exports of paper during the first five months of the current year reached a total value of $12,448,102, showing a fair rate of increase over shipments in the similar period of 1927 valued at $11,329,497.

Exports of newsprint in May amounted to 1,763,070 pounds, valued at $70,886, recording a gain over the 1,276,994 pounds of a declared value of $46,076 exported in the preceding month, but a sharp decline from the 2,627,198 pounds of a value of $128,340 exported in May last year. Export shipments of book paper, not coated, in May last were 2,539,732 pounds of a value of $165,836, against 1,242,090 pounds of a value of $111,932 in the same month a year ago, while exports of wrapping paper amounted to 2,812,261 pounds of a value of $178,272 in May this year, contrasted with 1,850,236 pounds of a value of $146,222 in the same month of 1927.

Writing paper was exported from the U. S. to the amount of 2,267,537 pounds of a value of $243,478 in May last, against 1,474,558 pounds of a value of $191,300 last year. Box board exports in May were valued at $114,654, compared with $126,554 a year ago, and of other paper board and strawboard $167,979, against $143,539. Exports of tissue and crepe paper climbed from a value of $84,796 in May, 1927, to $100,107 in the same month this year.

IMPORTS

Wood Pulp

There appears to be a certain amount of hesitancy on the part of paper and board manufacturers to buy wood pulp against future requirements, and the market rules comparatively quiet but this does not detract from the firmness which prices of practically all kinds of chemical pulp exhibit. Most consumers in the United States apparently have their major needs for the balance of this year well provided for, and only in certain instances is there any pronounced willingness shown to contract for next year's supplies, but on the other hand, manufacturers in Scandinavia and other parts of Europe are reported so well sold up for this year that they are not pressing buyers in the least, and market prices therefore are holding quite steady on well-stabilized levels. There are those who predict lower pulp prices over the next few months, and there are others who seem equally resolved that market levels are not likely to undergo any decline whatever; meantime a majority of consumers seem to be letting the future take care of itself and are not engaging in much buying except to satisfy actual wants.

Statistically, the situation looks firm. Latest reports from abroad say that mills in Sweden have only about 3 to 5 per cent of their production of strong sulphite and kraft pulp for this year yet to dispose of, and obviously they are not pressing to sell the small tonnage they still have to offer for shipment between now and when the closed navigation season is scheduled next winter. Firm prices are quoted from primary sources abroad, and importers and mill agents in New York find it necessary to demand equally firm figures when they are dickering with consuming customers in this country. Next year may witness a different supply condition, for if no labor disturbance develops in the interim and the Scandinavian mills are enabled to produce a full output of pulp, the tonnage available will be much larger than has been the case this year owing to the shutdown of the Swedish industry during a three months' strike, but members of the trade emphasize that next year still is a long ways off and that many things can happen meanwhile.

One of the features of the market has been the stiffening of quotations on bleached sulphite. Strictly prime imported bleached sulphite has strengthened in price to a degree where 3.85 to 3.90 cents a pound ex dock American Atlantic ports constitutes about the bottom level at which purchases can now be made, and in most cases 4 cents is quoted for such pulp. This condition has been brought about, it is stated, by the tremendous increase in consumption of bleached sulphite for rayon manufacture, and the resultant position of greater independence which producers of this class of pulp find themselves in. Strong unbleached sulphite of prime grade is quoted at 2.70 to 2.75 cents per pound ex dock New York or other Atlantic seaboard points, with some of the better qualities held for 2.80 to 2.90 cents, while prime strong easy bleaching sulphite is firm at 2.85 to 3.05 cents a pound on the dock, depending on the grade. Standard prime Swedish kraft pulp is selling at 2.70 cents ex dock. Imported ground wood of Scandinavian origin is quoted at $31 per short ton ex dock American Atlantic ports for dry weight. Some transactions in pulps for 1929 shipment have been recorded, generally at prices about $1 a ton below the above-mentioned quotations ruling on shipments during the remainder of this year.

Imports of wood pulp into the United States in May showed a fair gain as compared with the preceding month. Department of Commerce statistics put the total importations of chemical pulp into this country in May at 81,165 long tons, valued at $4,743,144, contrasted with 72,171 tons of a value of $4,239,189 in April, and 21,450 tons of mechanical pulp of a value of $530,942, against 16,562 tons of a value of $421,971 in the preceding month. Chemical pulp imports in the first five months of the current year totaled 484,898 tons, for a monthly average of 96,979 tons, compared with a monthly average of 96,754 tons in the corresponding period a year ago. Ground wood imports in the first five months of 1928 aggregated 93,079 tons, against 80,822 tons imported in the similar time last year.

Current market quotations ex dock New York, and receipts at the port of New York during July, follow:

Bleached sulphite, No. 1	3.85	4.25
Unbleached sulphite, strong No. 1	2.70	2.85
Unbleached sulphite, No. 2	2.50	2.60
Easy bleaching sulphite	2.85	3.05
Mitscherlich unbleached, genuine	3.00	3.25
Mistcherlich unbleached, ordinary	2.60	2.75
Kraft, standard Swedish	2.70	2.80
Ground wood, per ton (dry)	31.00	32.00

Pagel, Horton & Co., 1,500 bls. from Hernosand and 2,500 Gefle; J. Andersen & Co., 2,100 bls. from Hernosand, 1,050 Sarpsborg, 30 Gothenburg and 2,460 Trieste; Equitable Trust Co., 5,000 bls. from Gefle; Bulkley, Dunton & Co., 1,375 bls. from Gefle, 2,500 Bremen, 250 Hamburg and 2600 Iggesund; Scandinavian Pulp Agency, 5,180 bls. from Gefle and 3,921 Gothenburg; Johaneson, Wales & Sparre, 275 bls. from Gefle and 598 Gothenburg; Castle & Overton, 150 bls. from Gefle, 1,858 Rotterdam and 8,846 Hamburg; M. Gottesman & Co., 900 bls. from Rotterdam, 1,975 Gefle, 2,400 Sebenico and 1,750 Iggesund; Atterbury Bros. 2,500 bls. from Oslo; E. M. Sergeant Co., 2,148 bls. from Gothenburg; Thavenot & Co, 1,861 tons from Sheet Harbor; E. J. Keller Co., 1,600 bls. from Oslo, 1,390 Hamburg and 900 Rotterdam; Chemical National Bank, 810 bls. from Oslo; International Acceptance Bank, 800 bls. from Oslo; Woodpulp Service Corp., 125 bls. from Gothenburg; Parsons & Whittemore, 12 bls.

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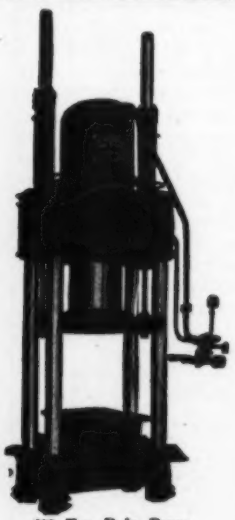
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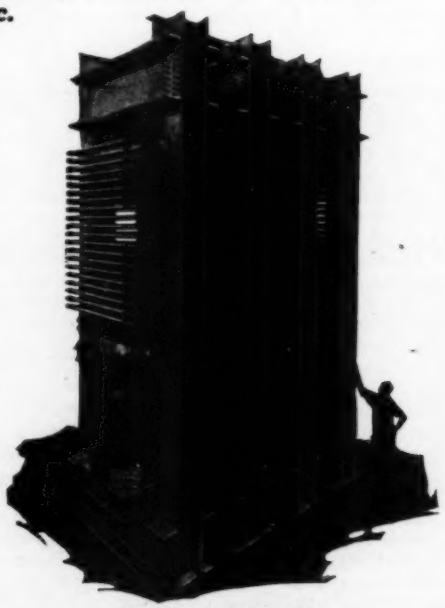
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Paper Stock

The United States imported rags for papermaking to the amount of 171,687,905 pounds, valued at $3,208,648, in the first five months of this year, compared with imports of 153,964,769 pounds of a value of $3,278,480 in the same period of 1927, according to official U. S. Department of Commerce statistics. Imports of waste paper and waste bagging in the same time amounted to 61,445,750 pounds, against 32,581,290 pounds last year, while imports of old rope and miscellaneous paper stock were 22,923,024 pounds, compared with 23,186,141 pounds in the first five months of last year.

Imports of papermaking materials during the month of July were fairly heavy, judging from unofficial figures of receipts at the port of New York. Arrivals of all grades with the exception of wood pulp at that port last month were as follows, these data being taken from manifests of steamers reaching New York during the month:

Old Bagging—E. J. Keller Co., 237 bls.; Bank of the Manhattan Co., 97 bls.; Castle & Overton, 106 bls.; Union Bank & Trust Co., 123 bls.; E. Butterworth & Co., 82 bls.; George W Millar & Co, 134 bls; James Rosenberg, 226 bls.

Old Rope—Alfred Bloch & Co., 56 coils; Ellerman's Wilson Line, 266 coils; American Express Co., 74 coils; Brown Bros. & Co., 696 coils and 223 bls.; Anglo-South American Trust Co., 117 coils; United Fibre Co., 451 bls.; Panama Railroad Co., 2 bls.; Chase National Bank, 370 bls.; National City Bank, 144 bls.; Kidder Peabody Acceptance Corp., 101 coils; N. E. Berzen, 107 coils; W. Schall & Co., 68 coils; American Exchange Irving Trust Co., 57 bls.; Union National Bank, 48 coils; American Bank & Trust Co., 32 bls.; Order, 288 bls.

Rags—Castle & Overton, 293 bls.; J. Reiss & Co., 10 bls.; George W. Millar & Co., 151 bls.; Alexander H. Searle, Inc, 961 bls; E. Mayer, 107 bls.; Darmstadt, Scott & Courtney, 277 bls.; J. D. Smith, 100 bls.; S. Raphael, 16 bls.; James Rosenberg, 104 bls.; Paul Berlowitz, 391 bls; S. Birkenstein & Sons, 89 bls.; E. Butterworth & Co., 63 bls.; American Bag Trading Co., 10 bls.; Salomon Bros. & Co., 35 bls; Katzenstein & Keene, 474 bls.; Sterling Mill Supply Co., 57 bls.; Jaffe Products Co., 15 bls; Atlas Waste Mfg. Co., 84 bls.; E. J. Keller Co., 1,394 bls.; National City Bank, 71 bls.; National Bank of Commerce, 195 bls.; Interstate Trust Co., 562 bls.; Banca Commerciale Italiana Trust Co., 200 bls.; State Bank, 45 bls.; Bank of New York & Trust Co., 118 bls.; Chase National Bank, 454 bls.; Bank of Commerce & Trust Co., 55 bls.; Bankers Trust Co., 4 bls.; Chemical National Bank, 441 bls.; Guaranty Trust Co., 39 bls.; Dominion Bank, 25 bls.; Bank of the United States, 53 bls.; Spaulding Fibre Co., 292 bls.; Amtorg Trading Co., 76 bls.; A. W. Fenton, Inc., 392 bls.; Brown Bros. & Co., 101 bls.; Goldman, Sachs & Co., 206 bls.; Order, 773 bls.

Miscellaneous Paper Stock—Castle & Overton, 676 bls.; George W.Millar & Co., 464 bls.; J. Cohen & Son, 66 bls.; Atlantic Navigation Co., 67 bls.; Overton & Co., 378 bls.; American Rag Trading Co., 510 bls.; Salomon Bros. & Co., 125 bls.; William Steck & Co., 319 bls.; W. Schall & Co., 343 bls.; Victor Galaup, Inc., 678 bls.; Darmstadt, Scott & Courtney, 215 bls.; Goldman, Sachs & Co., 319 bls.; S. Birkenstein & Sons, 1,374 bls.; Brown Bros. & Co., 1,010 bls.; Chemical National Bank, 324 bls.; First National Bank of Boston, 217 bls.; Gallagher & Ascher, 160 bls.; C. R. Spence & Co., 334 bls.; C. B. Richard & Co., 930 bls.; Alexander H. Searle, Inc., 411 bls.; George M. Graves Co., 105 bls.; Second National Bank of Boston, 103 bls.; R. F. Downing & Co., 240 bls.; Banca Commerciale Italiana Trust Co., 1,046 bls.; Guaranty Trust Co., 493 bls.; E. Butterworth & Co., 136 bls.; American Exchange Irving Trust Co., 257 bls.; Whaling Waste Products Co., 113 bls.; Daniel M. Hicks, Inc., 69 bls.; National City Bank, 1,523 bls.; Bank of New York & Trust Co., 179 bls.; Manufacturers Trust Co., 28 bls.; Bank of the Manhattan Co., 697 bls.; Chase National Bank, 604 bls.; Kidder Peabody Acceptance Corp., 238 bls.; Philadelphia National Bank, 302 bls.; Henjes, Jr., 23 bls.; Union Bank & Trust Co., 262 bls.; Van Oppen & Co., 84 bls.; National Bank of Commerce, 33 bls.; J. B. Moors & Co., 131 bls.; Albany Fibre Co., 23 bls.; H. Muehlstein & Co., 130 bls.; W. Loewenthal & Co., 41 bls.; Equitable Trust Co., 36 bls.; Madison State Bank, 107 bls.; E. J. Keller Co., 58 bls.; I. Horowitz, 35 bls.; B. D. Kaplan Co., 150 bls.; Meyers-Lipman Wool Stock Co., 37 bls.; U. S. Forwarding Co., 17 bls.; Milton Snedeker Corp., 95 bls.; National Bank of New York, 123 bls.; White Star Line, 31 bls.; T. D. Downing & Co., 55 bls.; Order, 3,198 bls.

Paper

Imports of paper into the United States in May last showed an increase over both the preceding month and the corresponding month last year, totaling in value $13,308,182, compared with $12,118,411 in April this year and $12,575,523 in May, 1927, according to official figures compiled by the U. S. Department of Commerce.

Paper imports in July were quite large, judging from arrivals at the port of New York. Receipts of all kinds of paper at that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Printing—Hudson Trading Co., 153 rolls from Gefle; E. Dietzgen & Co., 82 cs. from Rotterdam and 44 cs. Hamburg; Martin & Bechtold, 24 cs. from Bremen; Steiner Paper Corp., 71 cs. from

MITTS & MERRILL

Conveyor or Gravity Feed Shredder

THE operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Anything that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The Mitts & Merrill Shredder performs on magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock, in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

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Careful, Intelligent, Quick Service

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Consistency Regulators.
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¶ For whatever paper you make, whether fine ledger or bond, book or coarse paper, Fitchburg Felts give long and efficient service.

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Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

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Wrapping—F. C. Strype, 9 cs. from Antwerp; Globe Shipping Co., 13 cs. from Rotterdam; M. M. Cohen, 388 reels and 125 bls. from Gothenburg; Manufacturers Trust Co., 6 cs. from Hamburg; Insight Paper Co., 972 reels from Oslo; Thomas Barrett & Son, 80 bls. from Gothenburg; C. K. MacAlpine & Co., 162 bls. from Gothenburg; Birn & Wachenheim, 17 cs. from Southampton and 14 cs. Rotterdam; C. Steiner, 19 cs. from Hamburg; E. Dietzgen & Co., 51 cs. from Rotterdam and 12 cs. Hamburg; Gallagher & Ascher, 100 cs. from Havre; W. J. Homan, 10 bls. from Bremen; J. H. Schroeder Banking Corp., 6 cs. from Hamburg; J. P. Heffernan Paper Co., 52 bls. from Hamburg; Order, 8 bls. from Bremen.

Cigarette—American Tobacco Co., 950 cs. from Bordeaux; De-Mandult Paper Corp., 784 cs. from St. Nazaire and 276 cs. Havre; M. Spiegel & Sons, 6 bls. from Genoa; P. J. Schweitzer, Inc., 154 cs. from Marseilles; Standard Products Corp., 397 cs. from Havre; Surburg Co., 20 cs. from Havre; British-American Tobacco Co., 60 bls. from London, 107 cs. Havre and 8 cs. Hamburg.

Writing—Public Shipping Co., 27 cs. from Marseilles; Charton Corp., 7 cs. from Havre; Guibont Freres & Co., 17 cs. from Havre; Bank of the Manhattan Co., 18 cs. from Havre; B. Altman & Co., 6 cs. from Southampton; Gallagher & Ascher, 3 cs. from London; Freedman & Slater, 10 cs. from Hamburg.

Drawing—G. W. Sheldon & Co., 6 cs. from London; Keuffel & Esser Co., 48 rolls and 140 cs. from Hamburg and 2 cs. London; H. Reeve Angel & Co., 5 cs. from London.

Tissue—F. C. Strype, 12 cs. from Hamburg and 13 cs. Helsingfors; B. F. Drakenfeld & Co., 4 cs. from Liverpool; Schenkers, Inc., 106 cs. from Hamburg; W. J. Brynes Co., 2 cs. from Liverpool; F. B. Vandegrift & Co., 6 cs. from Liverpool.

Hanging—A. C. Dodman, Jr., Inc., 14 cs. from Liverpool and 5 bls. Southampton; F. J. Emmerich & Co., 23 bls. from Liverpool, 2 bls. London and 17 bls. Hamburg; C. A. Haynes & Co., 106 bls. from London and 2 bls. Liverpool; Stern, Stiner & Co., 4 bls. from Hamburg; W. H. S. Lloyd & Co., 47 bls. from Liverpool; R. F. Downing & Co., 3 bls. from London; Globe Shipping Co, 2 bls. from Hamburg; Order, 2 cs. from Liverpool.

Filter—A. Giese & Son, 20 bls. from Southampton; G. Leuders & Co., 20 bls. from Bordeaux; H. Reeve Angel & Co., 64 cs. from London and 64 bls. Southampton; E. Fougera & Co., 50 cs. from Bordeaux and 56 cs. Liverpool; C. G. Euler, 25 cs. from Bordeaux; J. Manheimer, 122 bls. from Southampton; Order, 30 bls. from Bordeaux.

Photo—Globe Shipping Co., 356 cs. from Bremen and 35 cs. Rotterdam; J. H. Schroeder Banking Corp., 109 cs. from Bremen and 52 cs. Rotterdam; P. C. Zuhlke, 45 cs. from Antwerp and 102 cs. Rotterdam; W. J. Brynes & Co., 26 cs. from Antwerp; Gevaert Co. of America, 38 cs. from Antwerp and 169 cs. Rotterdam; American Express Co., 55 cs. from Rotterdam and 20 cs. Antwerp; Order, 22 cs. from Hamburg.

Board—Chatham & Phenix National Bank, 109 bls. from Gothenburg; Adrian Vuyck, 947 reels from Rotterdam; State Bank, 268 reels from Rotterdam; Perkins-Goodwin Co., 502 reels from Rotterdam; Haas Bros., 104 reels from Rotterdam; F. B. Vandegrift & Co., 6 cs. from London; D'Orsay Perfumery Co., 57 cs. from Havre; H. Kayser, 27 cs. from Havre; Premier Flong Co., 30 cs. from Hamburg; C. H. Powell & Co., 98 reels from Rotterdam; Pulp & Paper Trading Co., 2 bls. from Oslo; National City Bank, 106 rolls from Antwerp; American Express Co., 100 cs. from Hamburg; State Bank & Trust Co., 137 reels from Rotterdam; Order, 336 rolls from Rotterdam.

Miscellaneous—Whiting-Patterson Co., 31 cs. from Southampton; Hensel, Bruckman & Lorbacher, 47 cs. from Bremen; 6 cs. Havre and 6 cs. Rotterdam; S. Gilbert, 94 cs. from Bremen; International Forwarding Co., 89 cs. from Rotterdam and 32 cs. Hamburg; J. J. Shore & Co., 3 cs. from Rotterdam; Louis Dejonge Co., 19 cs. from Rotterdam; Kupfer Bros. Co., 19 cs. from Rotterdam and 3 cs. Bremen; Judson Freight Forwarding Co., 25 cs. from Rotterdam, 54 cs. Bremen, 6 cs. Havre and 3 cs. Hamburg; Dingelstedt & Co., 4 cs. from Rotterdam; Heemsoth & Basse, 3 bls. from Rotterdam and 2 bls. Bremen; B. Altman & Co., 2 cs. from Rotterdam; F. Murray Holl, Inc., 10 cs. from Rotterdam and 15 cs. Bremen; Coenca-Morrison Co., 10 cs. from Havre; Keller-Dorian Paper Co., 113 cs. from Havre and 16 cs. Marseilles; H. Reeve Angel & Co., 2 cs. from London; American Exchange Irving Trust Co., 32 cs. from Hamburg, 61 cs. Havre and 20 bls. Trieste; E. M. Sergeant Co., 13 cs. from Gothenburg; State Bank, 5 cs. from Hamburg; J. Henschel & Co., 8 cs. from Hamburg; Banca Commerciale Italiana Trust Co., 13 cs. from Hamburg; J. Beckhard & Co., 2 cs. from Bremen and 91 cs. Rotterdam; Japan Paper Co., 16 cs. from Havre and 90 cs. Genoa; G. W. Sheldon & Co., 25 cs. from Havre and 6 cs. London; R. F. Downing & Co., 15 cs. from Havre; John Wanamaker, 3 cs. from Havre, 2 cs. Canton and 2 cs. Southampton; Arnhold & Co., 82 cs. from Hong Kong; A. Goodman & Co., 4 cs. from Havre; Steffens, Jones & Co., 5 cs. from Kobe; F. C. Strype, 7 cs. from Yokohama; Baer Bros., 23 cs. from Bremen; J. E. Bernard & Co., 7 cs. from Southampton; Atlantic Forwarding Co., 23 cs. from Hamburg; H. D. Catty & Co., 11 cs. from Havre and 4 cs. Rotterdam; Causon & Montgolfer, 36 cs. from Havre; Kolesch & Co., 5 cs. from Rotterdam; Ault & Wiborg Co., 5 cs. from Canton; P. H. Petry & Co., 10 cs. from Rotterdam and 4 cs. Bremen; Birn & Wachenheim, 4 cs. from Southampton; Quality Art Novelty Co., 22 cs. from Havre; F. B. Vandegrift & Co., 3 cs. from Havre; Brown Bros. & Co., 6 cs. from Hamburg; Globe Shipping Co., 87 cs. from Hamburg, 2 cs. Havre and 22 cs. Rotterdam; H. P. Andrews & Co., 14 cs. from Havre; Leutheric, Inc., 13 cs. from Havre; F. L. Kraemer & Co., 5 cs. from Bremen; Baldwin Universal Co., 19 cs. from Bremen; National Paper & Type Co., 20 cs. from Rotterdam; G. Borgfelt & Co., 8 cs. from Havre.

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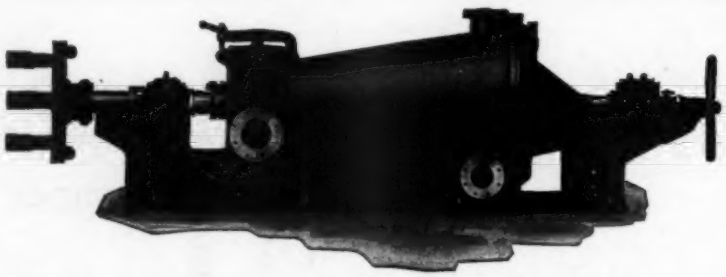

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The only firm making KNIVES for every machine from wood pile to finishing room.

HIGH GRADE KNIVES, BARS, PLATES AND JORDAN FILLINGS
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An Improved, Precision-Made Article

They Lie Flat—And Run Straight

Even At High Speed

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Newton Upper Falls, Mass.

Market Quotations

(*Continued from page 907*)

BONDS	Bid	Asked
Smith (Howard) Paper Co. 6s, 1941	103	
Smith (Howard) Paper Co. 5½s, 1953	95	98
Taggart Bros. 6s, 1941	95	100
Tait Paper & Color Industries 6s	88	90
Ticonderoga Pulp & Paper 6s, 1940	100	102
Tonawanda Paper Co. 5½s	99	101
United Wall Paper Co. 6s, 1947	96	98
Watab Paper Co. 6½s, 1942	102	104
Whitaker Paper Co. 7s, 1938	108¼	109½
Warren (S. D.) 6s, 1945	104	105½
Westfield River Paper Co. 7s	88	90
Wm. Whitmer Sons Parsons Pulp & Lumber 8s	20	21
Waterway Paper Products 6s, 1931	101	
Stocks		
American Book Co. Common	125	145
American Sales Book Co. Preferred	108	109½
American Sales Book Co. Common	77	77½
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co., Preferred	90	
Brown Company Preferred	95	97
Bryant Paper Co. Common		13
Belgo Canadian Paper Co. Pfd.	106	110
British Columbia Pulp & Paper Common	7	9
British Columbia Pulp & Paper Preferred	70	
Canada Paperboard Co. Pfd.	90	94
Champion Fibre Co. Preferred	107	
Champion Coated Paper Co. Pfd.	105	107
Chemical Paper Co. 1st Pfd.	90	
De Jonge (Louis) & Co. Pfd.	95	97
Dryden Paper Co. Pfd.	42	44
Diem & Wing Preferred	92	97
Downington Paper Co. Pfd.	103	
Downington Paper Co. Common	93	
Eastern Manufacturing Co. 1st Pfd.	65	
Eddy Paper Co. Common	30	
Escanaba Paper Co. "B" Preferred	42	
Escanaba Paper Co. Common	3	
Folding Box Co. Units	30	
Glatfelter Paper Co. Common	101	
Great Northern Paper Company	77	78½
Gair (Robt.) New Common	OW	BW
Hawley Paper Co. Preferred	96	
Hammermill Paper Co. Preferred	109	110½
Holyoke Card & Paper Co. Pfd.	170	
Hinde & Dausch Paper Co. Pfd.	101	103
Hinde & Dausch Paper Co. Common	180	
Indiana Flooring Co. Common		7
International Pulp Co. Preferred	73	
International Textbook Co.	25	28
Jessup & Moore Paper Co. 1st Pfd.	23	25
Jessup & Moore Paper Co. Common	5	10
Keyes Fibre Co. Common	43	45
Marathon Paper Mills Common	125	
Marathon Paper Mills Pfd.	170	
Mead Pulp & Paper Co. Common	68	72
Minnesota & Ontario Paper Co. Pfd.	70	75
Missisquoi Pulp & Paper Co. Pfd.	90	95
Munising Paper Co. Common	22	25
Munising Paper Co. Common	80	85
Morris Paper Co. Units	150	
Northern Paper Mills	28	32
National Paper & Type Co. Pfd.	77	83
Orono Pulp & Paper Co. Common	40	45
Oglesby Paper Company Preferred	101½	
Occident Paper Co., Preferred		15
Oxford Paper Co. Preferred	109½	
Oxford Paper Co. Common	202	
Parker Young Co. Preferred	84	87
Parker Young Co. Common	25	
Penobscot Chemical Fibre Co. Common	80	
Price Bros. Common	90	
Package Paper & Supply Units	22	
Robertson Paper Co. Preferred	5	
River Raisin Paper Co.	9	11
Robertson Paper Co. Common	50	
Rogers Paper Company	45	50
Southern Paper Co. 2nd Preferred	OW	
Sorg (Paul) Paper Co. Pfd.	100	
Sorg (Paul) Paper Co. Common		BW
St. Regis Paper Co. Preferred	105	106½
St. Croix Paper Co. Common	160	
Sutherland Paper Company	20	25
United Wall Paper Co. Preferred	90	95
United Paperboard Co. Preferred	59	64
West Virginia Pulp & Paper Co. Common	54	57
West Virginia Pulp & Paper Co. Preferred	100	103
West Virginia Timber Co. Preferred	90	96
Watervliet Paper Company	10	20
Watson (H. F.) Paper Co.	125	
Wayagamack Paper Co.	104	108

Lagerloef Trading Company's Anniversary

The Lagerloef Trading Company, of New York, is celebrating this year the tenth anniversary of its incorporation. From a modest beginning in 1918 when the company was organized by Hans Lagerloef, the business has grown to large proportions. Mr. Lagerloef was formerly connected

Speed Production With DAYTONS

Securing a new customer may be a tribute to the salesman, but receiving that customer's repeat order is a compliment to the product itself.

For which reason we announce that approximately 80% of the nearly 400 Dayton High Speed Beaters now "speeding production" in some seventy odd mills represents repeat business—a truly wonderful tribute to this particular product.

Incidentally there are more Daytons in the mills of America and Canada than the entire field of competitive high speed builders can account for—further evidence that the Dayton ACTUALLY DOES dominate.

Entirely new equipment or old type engines reconstructed.
GET THE FACTS.

The Dayton Beater & Hoist Co.,
Dayton, Ohio

E. K. Mansfield Co.,
501 5th Ave., New York, N. Y.

DAYTON HIGH SPEED BEATERS

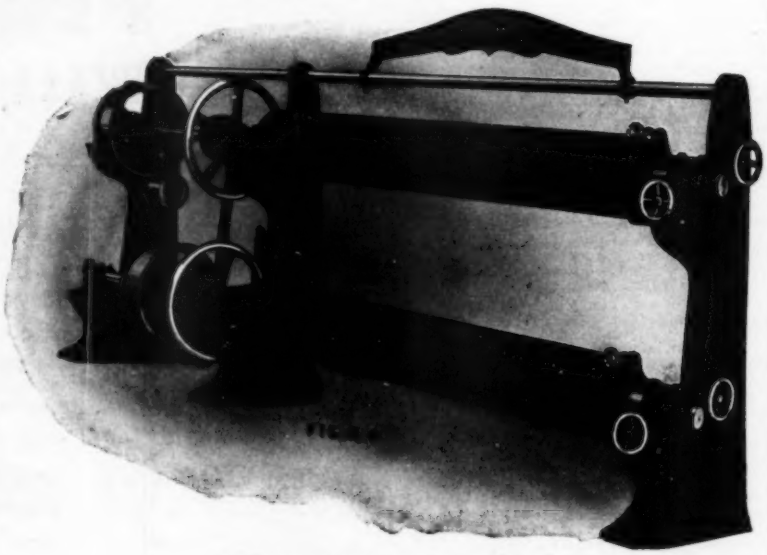
DESIGNERS AND BUILDERS OF

PAPER MAKING **MACHINERY** PAPER CUTTING

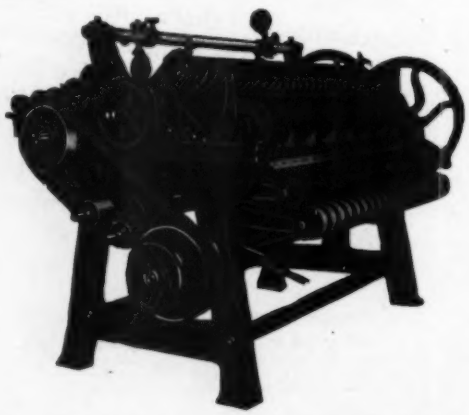
PAPER BAG MAKING

THE
SMITH
AND
WINCHESTER
MFG. CO.

ESTABLISHED 1828
AT
SOUTH WINDHAM
CONNECTICUT



TWO DRUM REEL—Heavy Pattern



PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

DEPENDABLE

DURABLE

BUNDLING PRESSES
NAPKIN FOLDERS
PRINTING DEVICES

Towel Interfolding Machines

Paper Converting Machine Co.
Green Bay, Wis.

with the Scandinavian American Trading Company, of New York, but branched out for himself as an independent concern on January 1, 1918. Six months later he and Orvar Hylin who, like Mr. Lagerloef, was connected in an official capacity with the Scandinavian American Trading Company, formed a corporation, Mr. Lagerloef being named president and treasurer and Mr. Hylin, vice president. A year afterwards, in July, 1919, Maurice London became identified with the company in the sales department and was chosen secretary of the corporation. For the past eight years the company has been represented in the middle-western territory by Robert E. Krudener, with offices in Kalamazoo, Mich. Mr. Krudener is credited with much of the success of the company in building up the large business that it enjoys in the Great Lakes district.

The Lagerloef Trading Company has maintained a steady, and of late a rapid, growth and is constantly extending its operations. Besides being sales agent for the Finnish Wood Pulp Union, the Lagerloef Trading Company is sole selling agent for the Finnish Cellulose Association for the United States, Canada, Mexico and Cuba. This association comprises all the chemical pulp mills in Finland, excepting one.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 31977—Binding board and card paper. Berlin, Germany. Purchase desired.

No. 31976—Cardboard for tickets, in colors. Harbin, China. Purchase desired.

No. 31934—Newspapers, old, baled, and overissued. Amsterdam, Netherlands. Agency desired.

No. 31932—Printing and writing papers. Osaka, Japan. Agency desired.

No. 31935—Wrapping paper, manila and kraft. San Juan, P. R. Agency desired.

No. 31950—Writing paper. Palermo, Italy. Agency desired.

No. 31966—Caustic soda, sodium sulphide, and casein. Milan, Italy. Purchase desired.

No. 31891—Soda ash. Tallinn, Estonia. Agency desired.

No. 32039—Paper manufacturing machinery for making paper from sawdust. Monterey, Mexico. Purchase desired.

No. 32041—Paper pulping and manufacturing machinery. Geelong, Australia. Purchase desired.

No. 32036—Bags and wrapping paper. San Juan, P. R. Agency desired.

No. 32064—Bank, bond and typewriter papers. Calcutta, India. Purchase and agency desired.

No. 32062—Paper containers for confectionery, and waxed paper. La Guaira, Venezuela. Purchase desired.

No. 32054—Machinery for manufacture of paper cups and bottles. Montevideo, Uruguay. Purchase desired.

No. 32055—Vulcanized fibre in boards, bars and tubes. Lausanne, Switzerland. Agency desired.

No. 32069—Writing paper. Palermo, Italy. Purchase and agency desired.

No. 32072—Writing and blotting papers and manila wrapping paper. Rio de Janeiro, Brazil. Agency desired.

No. 32198—Cellophane paper, 100,000 sheets. Montreal, Canada. Purchase desired.

No. 32167—Newspaper, overissued. Bombay, India. Agency desired.

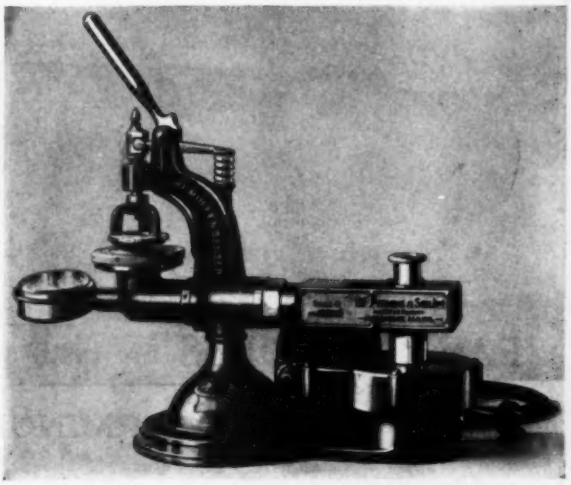
No. 32156—Papeteries and writing paper. Alexandria, Egypt. Agency desired.

No. 32200—Pattern paper, terneplate. Montreal, Canada. Purchase desired.

The general purchasing department of Remington Rand Inc., formerly at Ilion, N. Y., is now located in Remington Rand Bldg., 465 Washington St., Buffalo, N. Y.

Mullen Tester

Motor-driven eliminates the human element



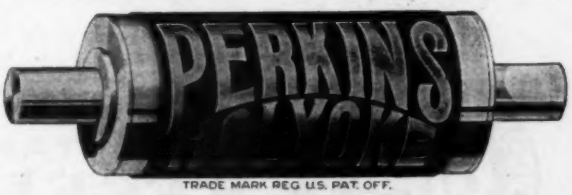
Mullen Motor-Driven Paper Tester is universally accepted as the most efficient device for ascertaining the bursting strength of paper and similar materials. It is quick in action, easily operated, and gives perfect uniformity of tests.

Your hand driven Mullen Tester can be made motor-driven at comparatively small expense.

We shall be glad to quote you attractive prices for this service.

Descriptive folder sent upon request.

B. F. Perkins & Son, Inc., Holyoke, Mass.

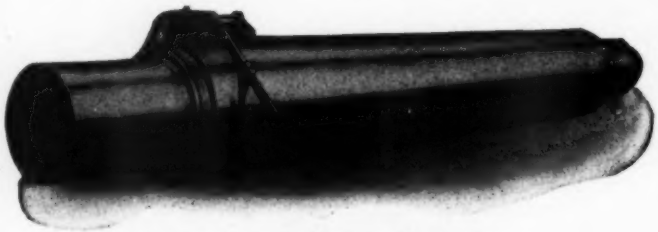


TRADE MARK REG. U.S. PAT. OFF.

COTTON ROLLS - PAPER ROLLS - EMBOSSING ROLLS - CHILLED IRON ROLLS - GRANITE PRESS ROLLS - WEB SUPERCALENDERS - GLASSINE SUPERCALENDERS - FRICTION CALENDERS EMBOSSING CALENDERS - SHEET CALENDERS - PLATERS - MULLEN PAPER TESTERS TENSILE TESTERS - VENTILATING FANS - RAG CUTTERS - STOCK CUTTERS - PAPER DAMPENERS BLEACH EJECTORS

FARREL

FARREL INDICATING ROLL CALIPER



Farrel Indicating Roll Caliper mounted on Farrel 30" x 184" roll

With this new caliper rolls may be calipered to the end of face without reversing the instrument. Only two adjustments are necessary in changing from one diameter roll to another. The majority of the parts are made of aluminum alloy making the caliper very light and easily handled but very sturdy.

EXTREMELY ACCURATE.

FARREL ROLLS are made as large as 298" ON THE FACE

FARREL-BIRMINGHAM COMPANY INC.
ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
{ Birmingham Iron Foundry, Derby, Conn., Est. 1836.

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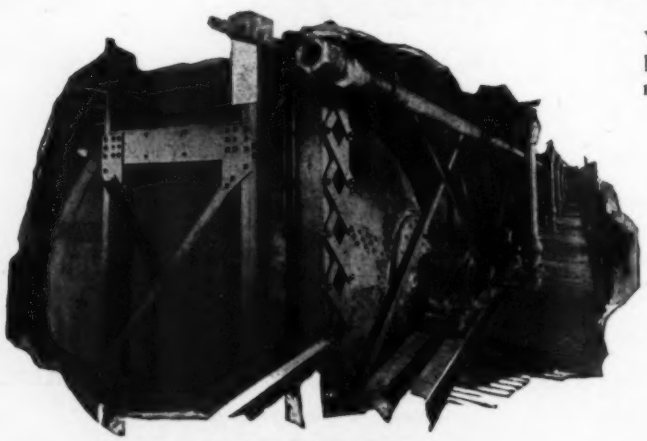

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